



Instruction Manual

Remote PC Terminals

CHALLENGER 15i-2

CHALLENGER 18i

CHALLENGER 22i



Foreword

Attention!



Please read this instruction manual and the associated EC Type Examination Certificate carefully before starting to assemble, connect, install and commission this device!

The CHALLENGER 15i-2, the CHALLENGER 18i and the CHALLENGER 22i, along with the associated PSU14i/6/543 power supply unit for the CHALLENGER 15i-2 and the PSU14i/8/543 power supply unit for the CHALLENGER 18i and CHALLENGER 22i may only be installed or removed by qualified personnel. Such personnel shall have undergone training, which included instruction on installation practices relevant to hazardous area equipment, the relevant rules and regulations, and on the general principles of area classification. This may include reference to the IEC code of practice IEC 60079-14.

The CHALLENGER KB-2S, KMU-2S and MTD-2S, and the KB-2-BCBN*, KMU-2-BCBN*, MTD-2-BCBN*, BCBN1i and 15i-FMO, are not currently in production and there are no plans for these to be produced in the foreseeable future; consequently, these units are not mentioned or detailed in this instruction manual.

The EC Type Examination Certificate (see page 4) should be fully adhered to.

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Technical Developments

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If any other trademarks are used in the text or shown in pictures within this manual, they are herewith acknowledged as the trademarks of the respective owners and are considered to be protected.

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Application



The CHALLENGER 15i-2, the CHALLENGER 18i and the CHALLENGER 22i are intrinsically safe visualisation and operator terminals for industrial use in potentially explosive atmospheres classified as Zone 2 and Zone 1.

The EC Type Examination Certificate that is valid here is **DMT 00 ATEX E089 X**

The components that make up the EC Type Examination Certificate are:

German version:

- EC Type Examination Certificate DMT 00 ATEX E089 X
- 1st supplementary appendix DMT 00 ATEX E089 X
- 2nd supplementary appendix DMT 00 ATEX E089 X

Safety instructions



These safety instructions contain information and precautionary measures which must be taken into account in order to ensure safe operation under the conditions described.

The section entitled **Installation and connection instructions**, starting on page 16, is to be read through carefully and adhered to.

Before using the device, the instruction manual is to be read through carefully!

In case of doubt (if there are any translation errors), the German instruction manual will apply.

No liability can be accepted for printing errors or mistakes in this instruction manual!!
Please contact us directly if you have any questions or problems!

Defects and unacceptable loads



As soon as it is feared that the safety of the device may have been impaired, the device must be taken out of operation immediately. Unintentional start-up must be prevented.

We recommend that you send the device to the manufacturer for inspection.

For example, the safety of the device may be jeopardised if:

- there is visible damage to the housing;
- the device has been exposed to unacceptable loads;
- the device has not been stored properly;
- the device has been damaged during transportation;
- inscriptions on the device are illegible;
- malfunctions occur;
- permissible limit values have been exceeded.

Safety regulations

When using the device, the user is required to observe the normal safety regulations in order to rule out the possibility of the device not being used properly.



- Only use the device for its permitted purpose.
- Incorrect or unacceptable use as well as failure to heed the instructions provided in this instruction manual will void any warranty provided.
- The CHALLENGER 15i-2, the CHALLENGER 18i or the CHALLENGER 22i may only be used in Zone 1 and/or 2, in accordance with the Ex symbols from the EC Type Examination Certificate.
- The 19" TCV2i module, the module rack as well as the power supply for these and the computer unit are to be installed outside the potentially explosive atmosphere.
- The TCV2i module may only be installed in the slot provided.
- The TCV2i must be connected directly to the PC. Only components recommended by GeCma may be used for ServSwitch applications.
- Alterations and modifications to the device may impair the explosion protection and are not permitted.
- The device may only be operated if it is undamaged and in good condition.
- Damage may invalidate the Ex protection.
- All the equipment is to be connected and operated correctly and properly in accordance with the valid standards, directives and installation instructions.
- It must also be ensured that the regulations specified in DIN EN 60079-14, the EC Type Examination Certificate and other pertinent and applicable standards are followed and adhered to!
- Avoid using aggressive acids or bases.
- The CHALLENGER 15i-2, the CHALLENGER 18i and the CHALLENGER 22i must be installed and operated in accordance with the valid installation and set-up instructions (e.g. EN 60079-14).
- The generally recognised rules of practice also apply.
- The devices must be operated in accordance with the electrical data and other details prescribed in the instruction manual and EC Type Examination Certificate.
- All earthing must be carried out before any connections are made.
- Installation and commissioning may only be carried out by trained personnel who have been trained in accordance with the applicable regulations, standards and guidelines.
- Only devices which comply with the electrical characteristics stated in the EC Type Examination Certificate or instruction manual may be connected.
- The national safety and accident prevention regulations will apply.
- Before commissioning the device, make sure that the device has been installed according to the regulations and instructions and that neither the device nor any of its cables are damaged.
- Only recommended cable types are to be used.
- The data cable must never be shorted.
- The maximum permissible ambient temperature range for the components is $-10\text{ °C} \leq T_a \leq +50\text{ °C}$.
- If the glass panel on the front is damaged, the display must be turned off immediately.
- All other instructions, information and regulations contained in this instruction manual must be followed and adhered to.



If this section is not heeded and infringement occurs, the prescribed explosion protection cannot be guaranteed and it will not be possible for any claims to be made under warranty! Deviations will require written consent from GeCma Components GmbH!

Introduction

The CHALLENGER 15i-2, the CHALLENGER 18i and the CHALLENGER 22i are intrinsically safe visualisation and operator terminals. They essentially comprise the intrinsically safe CHALLENGER 15i-2/18i/22i FMO display module, the intrinsically safe CHALLENGER KB and KB-2D keyboards, the KMU and KMU-2D keyboard and mouse, the CHALLENGER M industrial mouse, the CHALLENGER TB trackball, the MTD and MTD-2D mouse/trackball decoder and the intrinsically safe PSU14i/6/543 or PSU14i/8/543 local power supply unit and the associated CHALLENGER TCV2i transmitter. This transmitter transmits data from the PC to the CHALLENGER terminal and is intrinsically safe. Distances of up to 600 m, 400 m and 250 m can be covered by the 15i-2-FMO, the 18i-FMO and the 22i-FMO respectively.

The TCV2i transmitter is installed outside the potentially explosive atmosphere (in the so-called "SAFE AREA") and connected directly to the PC. This is done using the VGA graphics card connection for the RGB signal and the PS/2 connections for the keyboard and mouse. All that is needed in order to ensure that the system is able to operate fault-free is an IBM-compatible PC. The PC sending the data does not require any system-specific graphics cards or software drivers.

The display, keyboard and mouse data will be transmitted from the 19" TCV2i cartridge via a screened twisted-pair cable to the CHALLENGER 15i-2/18i/22i-FMO display module.

The CHALLENGER 15i-2/18i/22i-FMO display module houses the receiver electronics and the connector blocks for the keyboard and mouse/trackball. The CHALLENGER 15i-2/18i/22i-FMO display module is powered by the intrinsically safe PSU14i/6/543 or PSU14i/8/543 power supply unit.

An RS232 device for sending data via the CHALLENGER keyboards or decoder to the TCV2i, and from there to the PC, can be connected via the CHALLENGER KMU-2D and KB-2D keyboards or the CHALLENGER MTD-2D decoder. The RS232 device will be powered either using the K14/PIN1.5 power supply circuit provided for the CHALLENGER KMU-2D, KB-2D and MTD-2D or another suitable power source.

A second pointing device (PDS) such as e.g. the CHALLENGER TB or the CHALLENGER M can also be connected to the CHALLENGER KMU-2D, the KB-2D and the CHALLENGER MTD-2D.

The following variants are available:

Device type:	Design:
CHALLENGER 15i-2-FMO	Panel-mounted monitor
CHALLENGER 18i-FMO	Panel-mounted monitor
CHALLENGER 22i-FMO	Panel-mounted monitor
CHALLENGER KB	Panel-mounted keyboard
CHALLENGER KB-2D	Panel-mounted keyboard with PDS function and barcode scanner interface
CHALLENGER KMU	Panel-mounted keyboard + mouse
CHALLENGER KMU-2D	Panel-mounted keyboard + mouse with PDS function and barcode scanner interface
CHALLENGER TB	Trackball
CHALLENGER M	Mouse
CHALLENGER MTD	Mouse/trackball decoder
CHALLENGER MTD-2D	Mouse/trackball decoder with PDS function and barcode scanner interface
CHALLENGER 15i/18i/22i-FH	Field housing for 15"/18"/22" display
CHALLENGER 15i/18i/22i-FHP	Field desk housing for 15"/18"/22" display
CHALLENGER TCV2i	19" cartridge consisting of: transmitter, power supply unit and keyboard/mouse decoder (with video amplifier as standard)
PSU2	Power supply module for 1-4 TCV2is & TCS1is, 19" cartridge
RACK 84/RACK 84-2	19" module carrier, 426.72 mm wide, for switching cabinet applications
RACK 42/RACK 42-2	19" module carrier, 213.36 mm wide, for desktop applications
CPS-1*	Power supply for the CHALLENGER 15i-2/18i/22i FMO
PSU14i/6/543, PSU150i/6/543	Power supply for the CHALLENGER 15i-2-FMO
PSU14i/8/543, PSU150i/8/543	Power supply for the CHALLENGER 18i/22i-FMO

Fields of application

The CHALLENGER 15i-2, the CHALLENGER 18i or the CHALLENGER 22i can be used wherever operating and display functions are required in potentially explosive atmospheres.

CHALLENGER 15i-2:

Any software running on an IBM-compatible PC with XGA (1024 x 768 pixels, True Color 32-bit) can be used.

CHALLENGER 18i:

Any software running on an IBM-compatible PC with SXGA (1280 x 1024 pixels, True Color 32-bit) can be used.

CHALLENGER 22i:

Any software running on an IBM-compatible PC with WSXGA (1680 x 1050 pixels, True Color 32-bit) can be used.

Thanks to the intrinsically safe technology used in the CHALLENGER remote PC terminals, no expensive air purging or pressure encapsulation systems are required.

Operating principle

The VGA screen data, keyboard and mouse/trackball data are fed into the TCV2i 19" cartridge where they are combined and converted into intrinsically safe signals. Power is provided by the PSU2 19" power supply unit.

No special graphics card is required although we do recommend that only good quality cards are used as otherwise picture quality may suffer. The data cable connection should not be shorted.

The specially designed electronics in the TCV2i cartridge and the CHALLENGER 15i-2/18i/22i FMO enable data to be transmitted across distances of up to 600 m, 400 m and 250 m and more (if the resolution and display refresh rate are reduced).

Design of the CHALLENGER 15i-2/18i/22i-FMO display module

Please refer to the drawings in the appendix for the mechanical details of the CHALLENGER 15i-2/18i/22i-FMO.

Technical data:

Designation	: CHALLENGER-15i-2-FMO
Resolution	: XGA (1024 x 768 pixels) Lower resolutions are interpolated.
Screen size	: 15" approx.
Display type	: TFT with 16 million colours
Protection	: IP66 (NEMA 4X) from the front
Front panel	: Anodized aluminium
Dimensions	: 417 x 340.5 x 70 mm (w x h x d)
Weight	: 12 kg
Power supply	: Via PSU14i/6/543 oder PSU150i/6/543 oder CPS-1* (Ex i)
Ignition protection	:  II2G Ex ib IIC T4 Gb
Certificate number	: DMT 00 ATEX E089 X
Ambient temperature	: - 10 °C <= Ta <= + 50 °C

Designation	: CHALLENGER 18i-FMO
Resolution	: SXGA (1280 x 1024 pixels) Lower resolutions are interpolated.
Screen size	: 19" approx.
Display type	: TFT with 16 million colours
Protection	: IP66 (NEMA 4X) from the front
Front panel	: Anodized aluminium
Dimensions	: 505.9 x 427.7 x 80 mm (w x h x d)
Weight	: 16 kg
Power supply	: Via PSU14i/6/543 oder PSU150i/6/543 oder CPS-1* (Ex i)
Ignition protection	:  II2G Ex ib IIC T4 Gb
Certificate number	: DMT 00 ATEX E089 X
Ambient temperature	: - 10 °C <= Ta <= + 50 °C

Designation	: CHALLENGER 22i-FMO
Resolution	: WSXGA (1680 x 1050 pixels) Lower resolutions are interpolated.
Screen size	: 22" approx.
Display type	: TFT with 16 million colours
Protection	: IP66 (NEMA 4X) from the front
Front panel	: Anodized aluminium
Dimensions	: 615.6 x 436.6 x 115 mm (w x h x d)
Weight	: 20 kg
Power supply	: Via PSU14i/6/543 oder PSU150i/6/543 oder CPS-1* (Ex i)
Ignition protection	:  II2G Ex ib IIC T4 Gb
Certificate number	: DMT 00 ATEX E089 X
Ambient temperature	: - 10 °C <= Ta <= + 50 °C

Electrical data:

For the CHALLENGER 15i-2/18i/22i-FMO:

See: EC Type Examination Certificate DMT 00 ATEX E 089 X (point 15.3.1) & the 1st supplementary appendix DMT 00 ATEX E 089 X (point 1)

(For the components of the EC Type Examination Certificate: see A p. 4)

2nd supplementary appendix DMT 00 ATEX E 089 X

Terminal assignment:

See the wiring diagram in the appendix!

Design of the CHALLENGER KB/KB-2D/KMU/KMU-2D/MTD/MTD-2D keyboard

CHALLENGER KB keyboard/CHALLENGER KMU keyboard/mouse unit

The CHALLENGER KB/KMU keyboards are based on a 105-key keyboard which is essentially the same as a standard Windows 95 keyboard. The CHALLENGER KB keyboard has an external interface (K11/11-14) for connecting the CHALLENGER M (mouse module) or a TB (trackball). The CHALLENGER KMU keyboard has an integrated pressure-sensitive mouse but no external mouse/trackball interface.

CHALLENGER KB-2D/KMU-2D/MTD-2D

The CHALLENGER KB-2D/KMU-2D/MTD-2D keyboard has the same basic functions as the relevant CHALLENGER KB/KMU/MTD keyboard.

CHALLENGER MTD

The CHALLENGER MTD module is an interface for connecting a mouse or trackball module. It is used when there is no keyboard for connecting a mouse or trackball.

RS232 INTERFACE FOR BARCODE SCANNER in the keyboard

The KMU-2D/KB-2D/MTD-2D keyboard also has an intrinsically safe RS232 interface that is currently only used for the connection of an intrinsically safe barcode scanner.

RS232 data are forwarded to the TCV2i via the KMU-2D/KB-2D/MTD-2D and then to the PC as keyboard PS2 data.

The RS232 devices are powered by the KMU-2D/KB-2D and MTD-2D.

The intrinsically safe RS232 barcode scanner is connected to the 7-pole round socket that is mounted on the door of the desktop housing as standard.

Round socket CA6 for BC scanner	Designation	Terminal block K14:
3	RxD (RS232 data from scanner)	4
6	+ UB	1
PE	- UB	5,10

The scanner power supply has the following minimum values: > 4.5 V and > 800 mW!
The DIP switches that are located on the back of the KB-2D/KMU-2D can be used to produce various settings.

Setting: RS-232 parameters for the RxD line

Setting	OFF state	ON state
DIP switch S1	9600 baud, 7 bits, 2 stop bits, parity bit, EVEN	9600 baud, 8 bits, 1 stop bit, no parity bit

Setting: Country code for transmitting the scanner data correctly

Setting	OFF state	ON state
Keyboard layout "German"	DIP switch S2, S3	-
Keyboard layout "French"	DIP switch S3	DIP switch S2
Keyboard layout "English"	DIP switch S2	DIP switch S3

Note: The following ASCII characters that are sent by the barcode scanner cannot be transmitted:

- o Keyboard layout **"German"**: ASCII codes: 00_{hex}, 1D_{hex}, 5E_{hex}, 60_{hex}, 7F_{hex}
- o Keyboard layout **"French"**: ASCII codes: 00_{hex}
- o Keyboard layout **"English"**: ASCII codes: 00_{hex}, 7F_{hex}

Technical data:

Designation	: CHALLENGER-KB/KB-2D/KMU/KMU-2D/MTD/MTD-2D
Power supply	: Via CHALLENGER 18i-FMO/15i-2-FMO/22i-FMO (Ex i)
Connectors	: K11/18-pole Phoenix terminals K12/3-pole Phoenix terminals K14/12-pole Phoenix terminals (only for KB-2D/KMU-2D)
Dimensions	: 429 x 165 x 60 mm (w x h x d)
Weight	: 2.0 kg
Film	: Technoplast – resistant to most solvents
Ignition protection	:  II2G Ex ib IIC T4 Gb
Certificate number	: DMT 00 ATEX E089 X
Ambient temperature	: - 10 °C ≤ Ta ≤ + 60 °C

Only for CHALLENGER KB*/KMU*:

Keyboard type	: 105-key QWERTZ (D), QWERTY (UK), AZERTY (F) layout as well as a further 30 languages and special keyboards/IBM-compatible
Keys	: Film-protected short-travel keyboard
Protection	: IP66 from the front

Electrical data:

See: EC Type Examination Certificate DMT 00 ATEX E 089 X (point 15.3.3) & the 1st supplementary appendix DMT 00 ATEX E 089 X (point 2)

(For the components of the EC Type Examination Certificate: see A p. 4)

2nd supplementary appendix DMT 00 ATEX E 089 X

Terminal assignment:

See wiring diagram in the appendix!

Design of the CHALLENGER M & CHALLENGER TB

CHALLENGER M mouse module

The CHALLENGER M is a Microsoft-compatible industrial mouse module that is often used in conjunction with the CHALLENGER KB.

The four-stage pressure-sensitive mouse allows precise control of the speed and direction of the mouse pointer.

CHALLENGER TB trackball module

The CHALLENGER TB is a Microsoft-compatible industrial trackball that is often used in conjunction with the CHALLENGER KB. The 55 mm trackball allows high-precision control of the cursor.

Technical data:

Designation	: CHALLENGER TB
Description	: Trackball module with 55 mm trackball
Designation	: CHALLENGER M
Description	: Industrial trackball with FSR technology
Power supply	: Via CHALLENGER 22i/18i and 15i-2-FMO, intrinsically safe
Protection	: IP65 from the front
Front panel	: Anodized aluminium
Dimensions	: 98 x 165 x 40.5 mm (w x h x d)
Weight	: 0.45 kg
Ignition protection	:  II2G Ex ib IIC T4 Gb
Certificate number	: DMT 00 ATEX E089 X
Ambient temperature	: - 10 °C <= Ta <= + 60 °C

Electrical data:

See: EC Type Examination Certificate DMT 00 ATEX E 089 X (point 15.3.4)
(For the components of the EC Type Examination Certificate: see A p. 4)

Terminal assignment for CHALLENGER M:

Connecting cable:	Connection to K11 KB/KB-2/KMU/KMU-2/MTD/MTD-2	Connection:
Brown	K11 terminal 11	+ 5 V
White	K11 terminal 12	0 V
Yellow	K11 terminal 13	Data
Green	K11 terminal 14	Clock

Terminal assignment for CHALLENGER TB:

Connecting cable:	Connection to K11 KB/KB-2/KMU/KMU-2/MTD/MTD-2	Connection:
Red	K11 terminal 11	+ 5 V
Blue	K11 terminal 12	0 V
Green	K11 terminal 13	Data
White	K11 terminal 14	Clock

Design of the TCV2i transmitter

The TCV2i transmitter is designed as a 19" cartridge that is 71.12 mm wide and 133.35 mm high. The connections for connecting the VGA cable, the PS/2 keyboard cable and the PS/2 mouse cable to the PC are located on the front panel. The connections for an additional monitor, a PS/2 keyboard and a PS/2 mouse can be found to the right of these. The four intrinsically safe data lines are used to transmit data from the display, keyboard and trackball/mouse to the CHALLENGER terminal in the potentially explosive atmosphere. The terminal and the local keyboard/mouse controls can be locked and released using digital inputs 14D and 14Z.

14Z	14D	Status
H	H	Automatic mode
L	H	Terminal locked
H	L	Desktop locked

The TCV2i transmitter is compatible with PS2 pointing devices but not with the Microsoft "intellimouse" or "wheel mouse".

Technical data:

Designation	: CHALLENGER TCV2i
Housing installation	: 19" cartridge, 71.12 mm wide and 133.35 mm high
Power supply	: +/- (5 and 12) volts via external devices
Connectors	: VGA, PS2 keyboard and mouse
Weight	: 0.65 kg
Ignition protection	:  II(2)G [Ex ib] IIC
Certificate number	: DMT 00 ATEX E089 X
Ambient temperature	: - 10 °C <= Ta <= + 60 °C

Electrical data:

See: EC Type Examination Certificate DMT 00 ATEX E 089 X (point 15.3.5)
(For the components of the EC Type Examination Certificate: see A p. 4)

Special conditions for safe use:



1. The transmission module has to be installed outside the hazardous area in such a way that the connecting components will satisfy the requirements of IP20.
2. The connecting components for the external intrinsically-safe circuits of the transmission module are to be laid out so that bare parts are at least 50 mm away from connecting components or bare wires of nonintrinsically safe circuits or are separated from them by a barrier conforming to 6.2.1. of EN 60079-11:2007
3. The transmission module has to be installed in the rack in such a way that there is a distances in air of at least 1.5 mm between bare parts of the intrinsically-safe circuits and the metal housing and of at least 6 mm between bare parts of the intrinsically-safe circuits and bare parts of non-intrinsically safe circuits.
4. Along the intrinsically safe circuit (connection between transmission unit and the receiving unit) equipotential bonding is necessary because the IS circuits are connected to earth (enclosure).

Terminal assignment:

See the wiring diagram in the appendix!

Design of the 19" RACK 84 module carrier & data cable connection

If required, we can supply the TCV2i transmitter and the associated PSU2 power supply unit and the optional TCS1i card as a complete assembly in a 19" rack. The components will then be installed in a desktop housing, type Rack 42/Rack 42-2, or in a Rack 84/Rack 84-2 19" housing.

Then all you will need to do is to provide the power and plug in the connection cable (10-pole Phoenix connector).

When installing a number of racks in a switching cabinet, a distance of at least 44.45 mm should be kept between the racks.

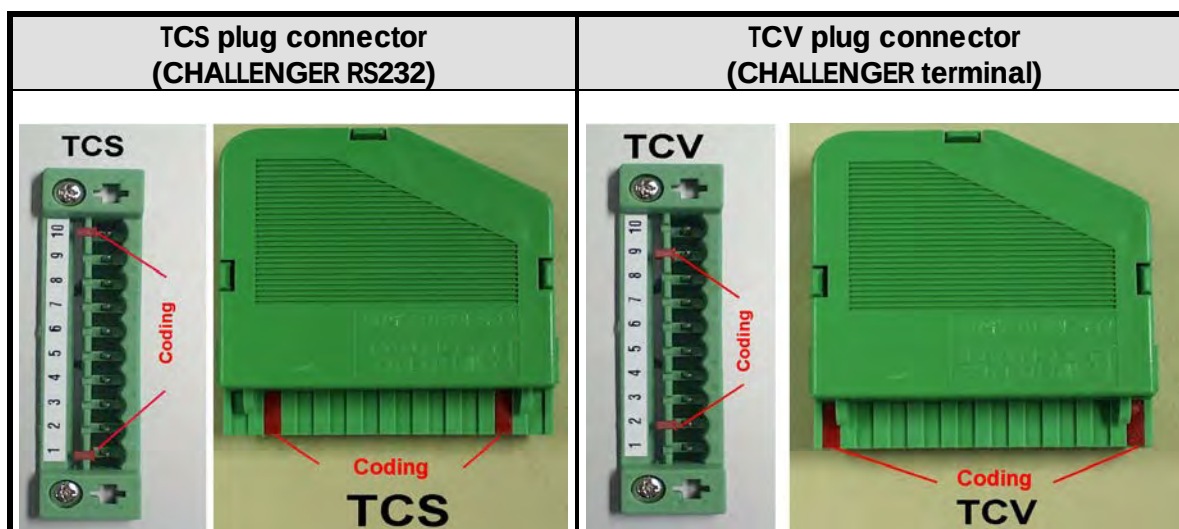
The (twisted pair) data cable should comply with the conditions specified on page 16 (Installation and connection instructions). All terminal blocks (connectors on the rack & K5 on the FMO module) are 10-pole Phoenix connectors.

Data cable (recommended cable colour)	Pin connector TCV2i/ ST10	10-pole socket connector on CHALLENGER rack	CHALLENGER FMO terminal block K5	Wire pair
White	28D	1	1	1a
Brown	28Z	2	2	1b
White	30D	3	3	2a
Green	30Z	4	4	2b
White	32D	5	5	3a
Orange	32Z	6	6	3b
White	26D	9	9	4a
Blue	26Z	10	10	4b
Screen	24Z	7	7	Screen
Screen		8	8	

The installation and connection of the data cable should be carried out in accordance with the valid regulations, standards and rules.

Coding of the plug connectors on the rack with CHALLENGER RS232

When connecting the 10-pole plug connector on the module carrier, as also integrated in the CHALLENGER RS232 TCS1i interface converter, it should be ensured that the coding sliders (see below) are fitted in the correct place in order to prevent an unacceptable connection with the TCS1i terminal block (CHALLENGER RS232).



Installation and connection instructions



The instructions given in this section should be consistently adhered to in order to ensure safe and reliable operation. The relevant standards and the conditions specified in the EC Type Examination Certificate are to be heeded.

The section entitled “Regulations relating to general operational safety” (pages 4 & 5) is to be read through carefully and strictly adhered to.

Installation may only be carried out by trained personnel who are able to provide corresponding proof that they have received suitable training. Those personnel must be able to prove that they are familiar with the characteristics of potentially explosive equipment.

The marking of the equipment will include the following:

 **II 2G Ex ib IIC T4 Gb**

 **II(2)G [Ex ib] IIC** (for TCV2i)

Only use the device for its permitted purpose.

The TCV2i transmitter is to be installed outside the potentially explosive atmosphere.

The maximum permissible ambient temperature range for the components is $-10\text{ °C} \leq T_a \leq +50\text{ °C}$.

If the glass panel on the front is damaged, the display must be turned off immediately.

Incorrect or unacceptable use as well as failure to heed the instructions provided in this instruction manual will void any warranty provided.

Alterations and modifications to the device that impair the explosion protection are not permitted.

The device may only be operated if it is undamaged and in good condition.

All equipment is to be connected and operated properly and correctly in accordance with the valid standards, guidelines and installation instructions.

The EC Type Examination Certificate must be observed.

The maximum permissible cable length between the CHALLENGER 22i/18i/15i-2-FMO and the CHALLENGER TCV2i is 600 m. In addition to the regulations specified in DIN EN 60079-14, the cable used must also fulfil the following requirements:

Characteristic	Values
Loop resistance	$> 15\ \Omega/\text{km}$
Insulation resistance	$> 50\ \text{M}\Omega \times \text{km}$
Cable capacitance	$< 120\ \text{nF}/\text{km}$
Cable inductance	$< 1400\ \mu\text{H}/\text{km}$
Test voltages - core/core	$> 1000\ V_{\text{eff}}$
Test voltages - core/screen	$> 500\ V_{\text{eff}}$
Radial insulation thickness of core	$> 0.2\ \text{mm}$
Diameter of copper core	$> 0.1\ \text{mm}$
Lower temperature limit	$> -10\text{ °C}$
Upper temperature limit	$< +60\text{ °C}$



As the Challenger uses shunt-diode barrier technology for the intrinsic safety, users should be familiar with the installation instructions given in a nationally accepted code of practice, e.g. DIN EN 60079-14 : 2008 - Section 12.2.4.

Installation of the modules in a potentially explosive atmosphere

General instructions



The instructions given in this section should be consistently adhered to in order to ensure safe and reliable operation. The relevant standards and the conditions specified in the EC Type Examination Certificate are to be heeded.

The section entitled "Regulations relating to general operational safety" (pages 4 & 5) as well as the section on page 16 entitled "Installation and connection instructions" are to be read through carefully and strictly adhered to.

Installation may only be carried out by trained engineers who are able to provide corresponding proof that they have received suitable training. Those personnel must be able to prove that they are familiar with the characteristics of potentially explosive equipment.

Installing the terminal with modules pre-installed



With the CHALLENGER 15i/18i/22i -FH and CHALLENGER 15i/18i/22i-FHP versions, the corresponding modules can be pre-installed in the factory, including the fitting of cables, if required. The only cabling that will then be required will be the data cable and the power supply cables. For the exact dimensions, please refer to the drawing in the appendix.

All the housing nuts and fixing brackets must be tightened evenly.

Fixing the FH/FHP CHALLENGER 15i/18i/22i housing

- Fix the standpipe to the floor or to the ceiling or, if using an elbow, to the wall as appropriate.
- Fix the installation coupling to the standpipe/elbow as shown in drawing 10100251 (see appendix).
- Fix the CHALLENGER FH/FHP 15i/18i/22i housing to the installation coupling using screws.

Installing the panel-mounted modules

If you have ordered the panel-mounted modules, make sure that the rubber seals fit properly all the way round and observe the cable requirements specified (see the installation diagram in the appendix). For the dimensions of the panel modules, please refer to the drawing in the appendix.

Please make sure that the required level of protection IP65/IP66 (Nema 4X) is provided and maintained. Check all the seals during installation.

Connection of the modules in a potentially explosive atmosphere

General instructions



The instructions given in this section should be consistently adhered to in order to ensure safe and reliable operation. The relevant standards and the conditions specified in the EC Type Examination Certificate are to be heeded.

The section entitled “Regulations relating to general operational safety” (pages 4 & 5) as well as the section on page 16 entitled “Installation and connection instructions” are to be read through carefully and strictly adhered to.

Installation may only be carried out by trained engineers who are able to provide corresponding proof that they have received suitable training. Those personnel must be able to prove that they are familiar with the characteristics of potentially explosive equipment.

The mechanical properties of the cables are to be heeded during installation.

Additional clamping and shunting of the data cable from the TCV2i to the display must be avoided.

Connection of the power supply cable to the PSU14i



The corresponding “**PSU14i/*/** instruction manual**” and the **EC Type Examination Certificate “DMT 00 ATEX E090”** apply to the CHALLENGER PSU14i/6/543 and PSU14i/8/543. The instructions given in these documents must be strictly adhered to!

Feed the 24 V power supply cable through the M25 cable gland in the standpipe/ elbow and connect it to the PSU 14i/6 or PSU14i/8 at the auxiliary power terminal box.

Auxiliary power terminal boxes:	Connection:
1	20 V to 30 VDC
2	0 V supply
3	PE

Dimensioning of the auxiliary power cable

The following values relate to a supply voltage of 24 VDC and a current of 3A. The maximum voltage drop along the cable must not exceed 4 VDC.

Cable length [m]	Cable cross-section [mm ²]
< 50	1.5
< 85	2.5
< 140	4.0
< 220	6.0
< 370	10
< 600	16

Connection of the power supply cable to the PSU150i



The corresponding “PSU150i/*/** instruction manual” and the **EC Type Examination Certificate “TÜV 03 ATEX 2032”** apply to the CHALLENGER PSU150i/6/543 and PSU150i/8/543. The instructions given in these documents must be strictly adhered to!

Feed the power supply cable through the M25 cable gland in the standpipe/elbow and connect it to the PSU 150i/6 or PSU150i/8 at the auxiliary power terminal box.

Auxiliary power terminal boxes:	Connection:
1 + 2	86-265 VAC or 120-370 VDC
3	PE

Connection of the data cable

The data cable is fed through the M20 cable gland and connected to the display at K5 by means of screws (see the section entitled “Design of the 19” RACK 84 module carrier & data cable, p. 15).



Earthing between the standpipe or elbow and the FH/FHP housing

When using a standpipe or an elbow and a rotary coupling, the pre-installed earth connection on the FH/FHP housing should be connected to the M6 x 20 self-tapping coupling screw (inside the standpipe). For the installation of the coupling, see drawing no. 10100251 in the appendix.



connected by means of the coupling screw



Star point in the housing

Installation and connection of the modules in a non-explosive atmosphere

General instructions



The instructions given in this section should be consistently adhered to in order to ensure safe and reliable operation. The relevant standards and the conditions specified in the EC Type Examination Certificate are to be heeded.

The section entitled “Regulations relating to general operational safety” (pages 4 & 5) as well as the section on page 16 entitled “Installation and connection instructions” are to be read through carefully and strictly adhered to.

Installation may only be carried out by trained engineers who are able to provide corresponding proof that they have received suitable training. Those personnel must be able to prove that they are familiar with the characteristics of potentially explosive equipment.

Installation

- Install the pre-assembled Rack 84/Rack 84-2 in a 19" assembly cabinet or set up the pre-assembled Rack 42/Rack 42-2 as a desktop housing.

When installing a number of racks in a switching cabinet, a distance of at least 44.45 mm should be kept between the racks.

Earth connection

Earthing is carried out by means of a connection to the earthing studs provided on the back of the CHALLENGER rack.

Connection in general

Connect the VGA, keyboard and mouse cable from the PC to the plug contacts (marked IN) on the TCV2i.

Now connect the PC using the accessory cable provided with the TCV2i.

PC	TCV2i
VGA output	VGA in
PS/2 keyboard	To PC keyboard
PS/2 mouse	To PC mouse

A monitor, keyboard and mouse can also be connected to the plug contacts (marked OUT) on the TCV2i.

TCV2i	Additional units
VGA out	VGA monitor
To desktop keyboard	PS/2 keyboard
To desktop mouse	PS/2 mouse

Plug in the power supply cable and turn on the power switch on the back of the rack. The green LEDs on the PSU2 should light up.

Insert the data cable into the 10-pole Phoenix connector on the back of the rack in question (see the section entitled “Design of the 19" RACK 84 module carrier & data cable, p. 15).

Commissioning

General instructions



The instructions given in this section should be consistently adhered to in order to ensure safe and reliable operation. The relevant standards and the conditions specified in the EC Type Examination Certificate are to be heeded.

The section entitled “Regulations relating to general operational safety” (pages 4 & 5) as well as the section on page 16 entitled “Installation and connection instructions” are to be read through carefully and strictly adhered to.

Installation may only be carried out by trained engineers who are able to provide corresponding proof that they have received suitable training. Those personnel must be able to prove that they are familiar with the characteristics of potentially explosive equipment.

Setting and switching on



Before you switch on the terminal, check again to make sure that all the assembly, connection and installation instructions provided have been followed in order to ensure the safe operation of the explosion protection and your equipment.

Any type of power management software in the PC must be deactivated.

Fine tuning of the picture quality

Now adjust the CHALLENGER 15i-2/18i/22i-FMO to the length of the cable used by means of the three DIP switches S5 to S7 on the back. All three switches must be set to the same setting. For cable lengths in excess of 275 m, the TCV2i is specially configured and marked in the factory (see also the section entitled “Design of the TCV2i transmitter”).

S5, S6, S7	1	2	3	4	5	6	7	8	9	10
30–75 m										
75–125 m										
125–175 m										
175–300 m										
275–325 m										
325–375 m										
375–450 m										
450–500 m										

ON	
OFF	
FT	

FT: Fine Tuning: the grey/hatched “switches” 6 and 7 can be connected to all the switch positions and are used to fine tune the picture.

Switch on the terminal and PC and check to make sure that the keyboard and mouse are working properly.

To tune the picture quality, select an application such as e.g. Windows Explorer. Remember that the best picture quality can only be achieved when working in the resolution for the CHALLENGER 15i-2 (1024 x 768 pixels), the CHALLENGER 18i (1280 x 1024 pixels) and the CHALLENGER 22i (1680 x 1050 pixels). That is due to the LCD used as it will only provide a perfectly sharp image when working with these resolutions. If you select a

lower resolution, the internal logic will automatically interpolate the signal to a resolution of 1024 x 768, 1280 x 1024 or 1680 x 1050 pixels. (However, as soon as this is no longer an integer ratio, the optimum quality of the picture will be lost). The optimum image refresh rate for the terminal should be approximately 60 Hz but can be higher.

The linear fine tuning is carried out first of all using the trimming potentiometers on the back of the CHALLENGER 15i-2/18i/22i-FMO. The **Focus** trimming potentiometer is used to adjust the sharpness of the picture while the **Brightness** trimming potentiometer is used to adjust the brightness of the picture. Turning the controls for the trimming potentiometers to the left will make the picture sharper or brighter while turning them to the right will have the opposite effect in each case.

Start by making the picture darker and less sharp. Now use the **Brightness** controller to adjust the brightness to half the required value and then use the **Focus** controller to sharpen the image. Adjust slightly as required.

Then carry out an Autoadjust (see the section entitled **Operation and adjustment of the display** with regard to this). If the picture is not set correctly, the brightness and contrast values in the OSD menu should be set to approximately 25% and adjusted using the **Brightness** and **Focus** controllers on the display.

At distances of more than 275 m, length compensation may be required in order to get a better picture quality. Length compensation can be carried out using DIP switch blocks S8 to S13 and a suitable test picture (e.g.: Längenabgleich.bmp).

Description of DIP switch blocks S8 to S13:

The individual DIP switch blocks S8 to S13 can be used to adjust the propagation times of the individual coloured cables.

There are 2 blocks for each colour:

- S12 and S13 are used for blue
- S10 and S11 are used for green
- S8 and S9 are used for red

The DIP switches are used to increase the propagation time by between 0 ns and 15 ns for each colour.

Each switch block consists of 4 DIP switches whereby each individual switch can be set to ON or OFF.

Default switch settings:

S8, S10, S12:	all DIP switches set to ON
S9, S11, S13:	all DIP switches set to OFF

The two DIP switch blocks for the associated colour are always adjusted in pairs for the colour in question, e.g. if DIP switch 1 from block S8 is set to OFF, then DIP switch 1 from block S9 must be set to ON. This would increase the propagation time for the colour red by 1 ns. If you look at the test picture, you will see that the colour red has been moved fractionally to the right.

If all the DIP switches are set to their default setting, that corresponds to a time increase of 0 ns.

If the setting of just DIP switch 1 from the block pair in question is changed, that corresponds to a time increase of 1 ns.

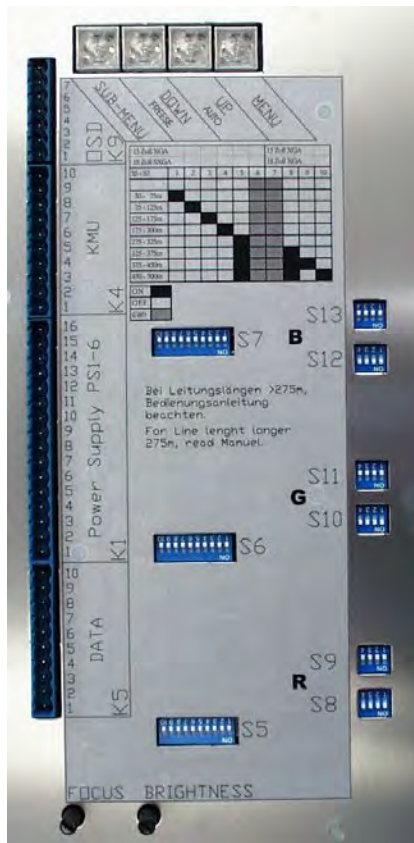
If the setting of just DIP switch 2 from the block pair in question is changed, that corresponds to a time increase of 2 ns.

If the setting of just DIP switch 3 from the block pair in question is changed, that corresponds to a time increase of 4 ns.

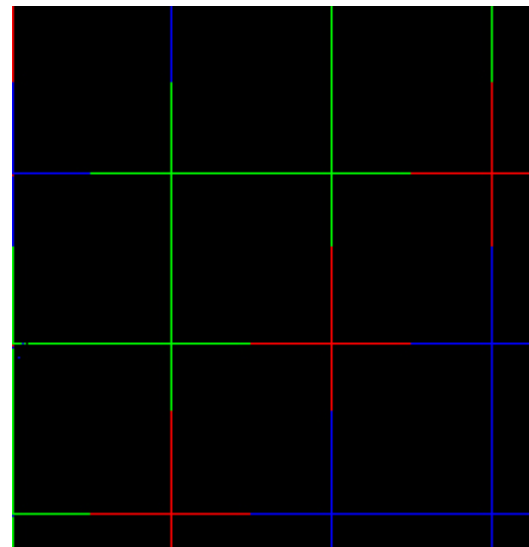
If the setting of just DIP switch 4 from the block pair in question is changed, that corresponds to a time increase of 8 ns.

A time increase of up to 15 ns can be achieved by combining DIP switches 1-4 in binary notation.

The shift in the individual colours can be seen in the test picture “Längenabgleich.bmp” and the optimum time for the primary colours blue, green and red can be set.



Rear view of 18" display



Test picture: Length compensation

Length compensation procedure:

1. Open the test picture “Längenabgleich.bmp” and maximise to full screen.
2. Compare the transitions between the vertical red, green and blue colours. The colour that is furthest to the right of the perpendicular will be taken as a reference and the time will have to be increased for the other colours.
3. The DIP switches can be used to increase the times for the relevant colours by between 0 ns and 15 ns so that the vertical shift comes as close as possible to the reference colour. The way to operate the DIP switches is described above.
4. The setting of the propagation time is completed once the vertical aspect of the colours is virtually identical.

The next step to be carried out, if necessary, is the process of fine adjustment using the four buttons on the back of the CHALLENGER 15i-2/18i/22i-FMO. Press the **Menu** button to bring up the **On-Screen Display (OSD)** menu or make a direct selection by simultaneously pressing the “CTRL”, “O”, “S” and “D” keys followed by the “ARROW UP” key.

Options

There are a number of useful accessories and options available for the CHALLENGER 15i-2/18i/22i and these are described in detail below.

CHALLENGER SW2 (optional keyboard/mouse switch)

The CHALLENGER SW2 is a front panel with two switches that can be installed in the 19" rack as an option. The SW2 can be used to select three modes of operation:

- Automatic mode Normal mode. No operator terminal is permanently manually locked.
- Desktop locked The desktop keyboard/mouse functions are permanently locked. It is only possible to use the terminal keyboard/mouse.
- Terminal locked The terminal keyboard/mouse functions are permanently locked. It is only possible to use the desktop keyboard/mouse.

CHALLENGER SW1 (key-operated switch)

With this option, it is possible to lock the operation of the terminal keyboard/mouse using a key-operated switch that is integrated in the terminal housing, for example. (See the section entitled "Design of the CHALLENGER KB/KB-2D/KMU/KMU-2D, starting on page 11).

The key should not be left in the lock!!!

CHALLENGER SW3 (optional keyboard/mouse switch)

The CHALLENGER SW3 option can be installed in a 19" rack as a front panel with two switches or a key-operated switch. The switches can also be installed up to 10 m from the 19" rack. The SW3 can be used to select two modes of operation. If the switches are installed at a distance of 10 m, a screened cable must be used!

- Desktop locked The desktop keyboard/mouse functions are permanently locked. It is only possible to use the terminal keyboard/mouse.
- Terminal locked: The terminal keyboard/mouse functions are permanently locked. It is only possible to use the desktop keyboard/mouse.

CHALLENGER SW4 (optional keyboard/mouse switch)

With this option, it is possible to lock the operation of the terminal keyboard/mouse as well as the touchscreen using a key-operated switch that is integrated in the terminal housing, for example.

UVI Video Input

This option allows an intrinsically safe video signal to be connected to the display. That video signal can be displayed in full screen mode or picture in picture mode.

BCS Barcode Scanner Input

An intrinsically safe barcode scanner with intrinsically safe RS232 interface (Ex i) can be connected to the CHALLENGER keyboard. The scanner data can be sent to the PC via the TCV2i card without the need for any additional cables to the non-explosive area. (See the section entitled "Design of the CHALLENGER KB/KB-2D/KMU/KMU-2D).

Cascading of up to 4 TCVs

The parallel output of the first TCV2i can be connected to the input of the second TCV2i. Up to 4 TCV2is can be connected based on the same principle. The same image will be displayed on all the connected CHALLENGER terminals. The keyboard and mouse/keyboard can also be operated from any of the terminals. Automatic mutual interlocking will ensure that operation can only be carried out from one terminal at a time (the other terminals will be released again after two seconds).

Software for the TCV2i and KMU/KMU-2D/KB/KB-2D/MTD and MTD-2D

Software is required in order to enable the TCV2i and KMU/KMU-2D/KB/KB-2D/MTD/MTD-2D to communicate the data from the PC along the transmission path. The software version for the TCV2i and KMU/KMU-2D/KB/KB-2D/MTD/MTD-2D is > 1.16.

Additional functions within version 1.16 compared with 1.15

1. Optical error analysis in the remote unit

If there is a faulty RS485 connection between the local unit and the remote unit, an optical error signal will be activated.

This will take the following form:

- 1 Hz flashing of the "SCROLL LOCK" LED = data line not connected;
- 1 Hz flashing of the "NUM LOCK" LED = data line cross-wired.

2. Backlight control system

With this standard function, the life of the background lighting can be increased significantly. If the CHALLENGER keyboard/mouse is not used for approximately 1 hour, the brightness of the background lighting will be reduced to 50%. As soon as the keyboard/mouse is used, the default brightness setting will be restored. Available from software version 1.09 onwards.

If you want to disable this function, all you have to do is to disconnect the connector "Terminal K4 Pin 4" on the CHALLENGER 15i-2/18i/22i-FMO (display) from the connector "Terminal K11 Pin 4" on the CHALLENGER KB.

3. Backlight dimming via the remote keyboard

The backlight can be dimmed by pressing the 4 arrow keys on the remote keyboard simultaneously.

4. Displaying software revisions

The key combination "[CTRL+S+O+F]" on the remote unit can be used to display the software version when the Editor window is open.

5. Expansion of the KEYLOCK inputs

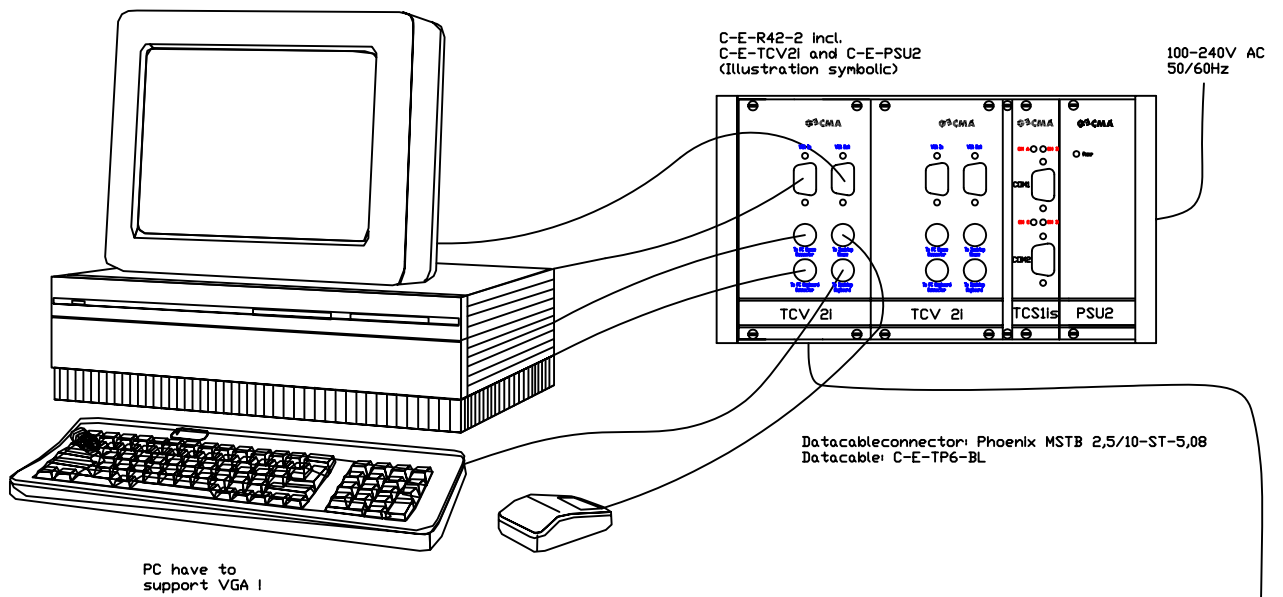
The previous KEYLOCK input K11/18 has now been expanded by adding 3 inputs (K12/1-3), i.e. the key-operated switch can be connected to both K11/18 and inputs K12/1-3.

6. Automatic deactivation of OSD mode

OSD mode will be deactivated automatically approximately 5 s after it is activated and after the last keystroke.

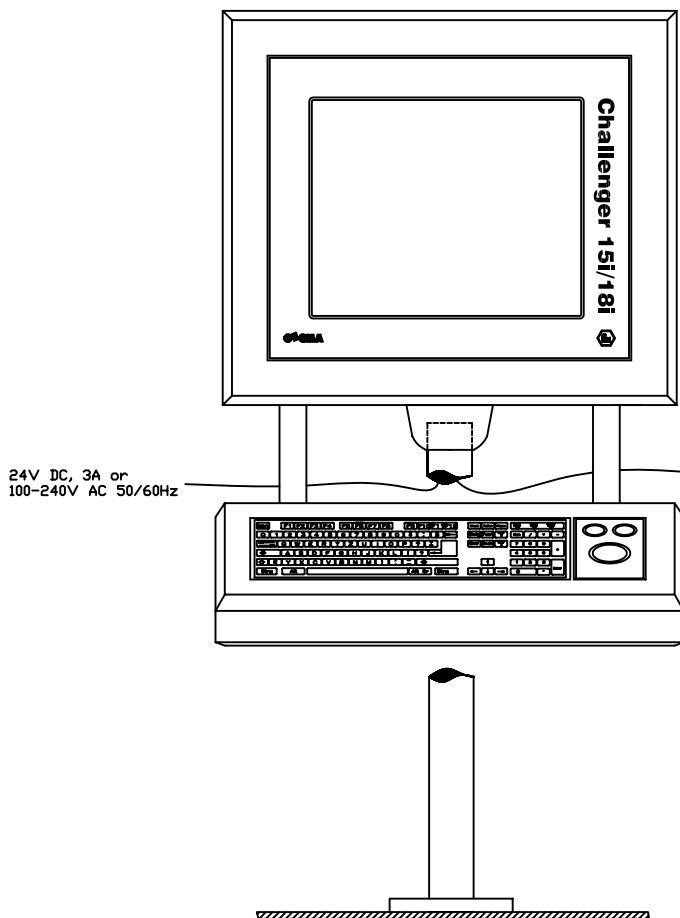
7. Optical indication that OSD mode is active

If OSD mode is active, all 3 LEDs on the local and remote keyboard will flash at a frequency of 1 Hz.



Non hazardous area

hazardous area



			Erstellt: SN	Datum: 07.03.03
			Geprüft:	Datum:
			Maßstab: 1:1	Gewicht:
			Verkstoff:	Überfläche:
			Zul.Abw.: Allgemeintoler. mittel DIN 7168	
			Titel	
			Installationplan	
			Challenger	
b	PIP-2 enclosure	20.07.99	A.Jung	
a				
Rev.	Änderung	Datum	Name	
			GeCma Components GmbH	Zeichnungsnummer:
			D-50169 Kerpen, Germany	30100164
				Blatt
				1/1

For UL/cUL:
Class I, Zone 1, IIC T4
Class I, Division 2, Group A,B,C,D T4



For UL/ULC:
All Intrinsically Safe wiring must comply with Article 504 of the National Electrical Code, ANSI/NFPA 70 for the United States, or Part 1, Section 18 of the Canadian Electrical Code for Canada. All intrinsically safe wiring shall be kept separate from non-intrinsically safe wiring.

The selected video device connected to X2 or the barcode scanner connected to BU1 shall be approved with intrinsically safe circuits which satisfy the following:

$$U_0/V_0 \leq U_i/V_{i\max}$$

$$I_0/I_{sc} \leq I_i/I_{\max}$$

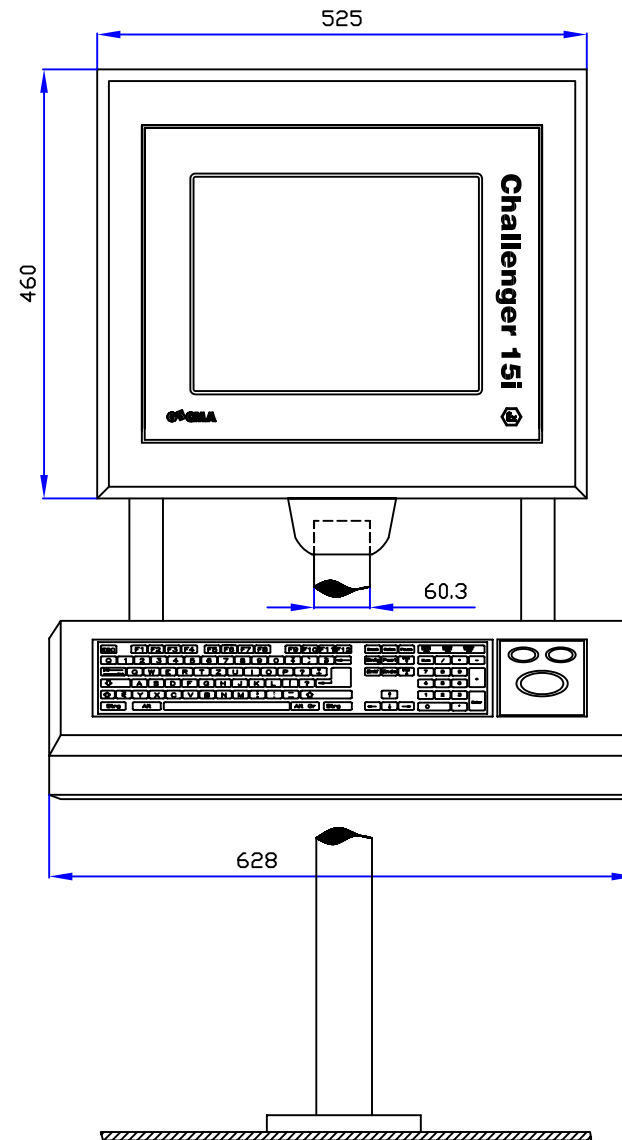
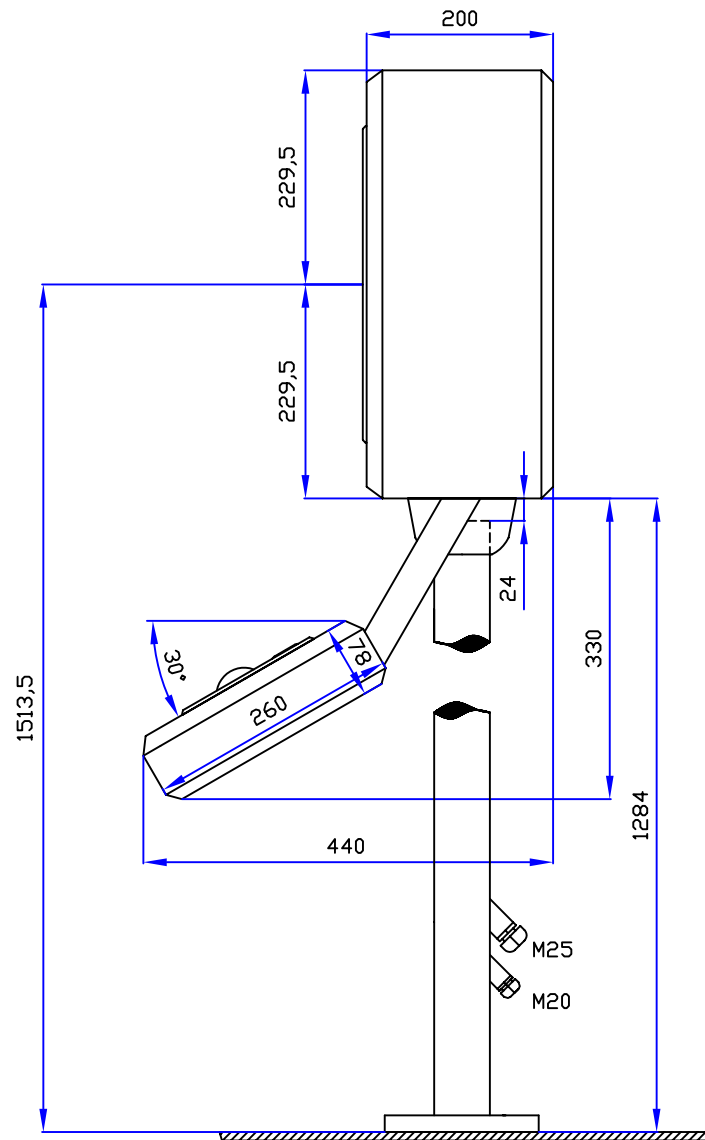
$$C_0/C_a \geq C_i \text{ plus } C_{able}$$

$$L_0/L_a \geq L_i \text{ plus } L_{able}$$

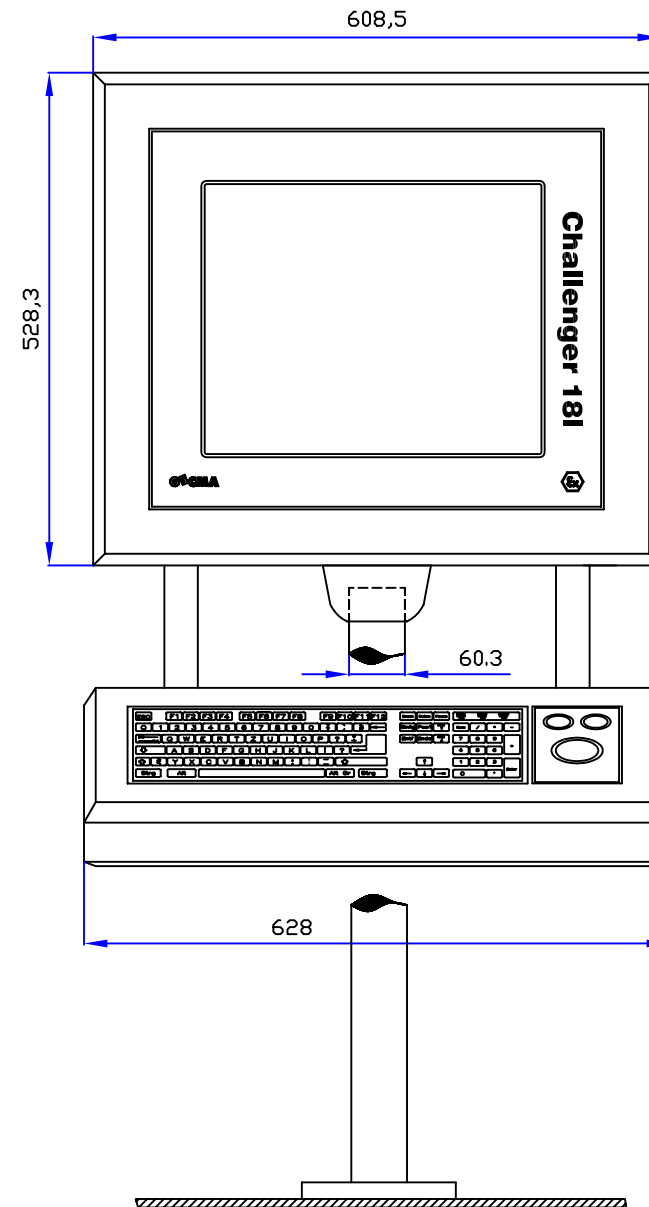
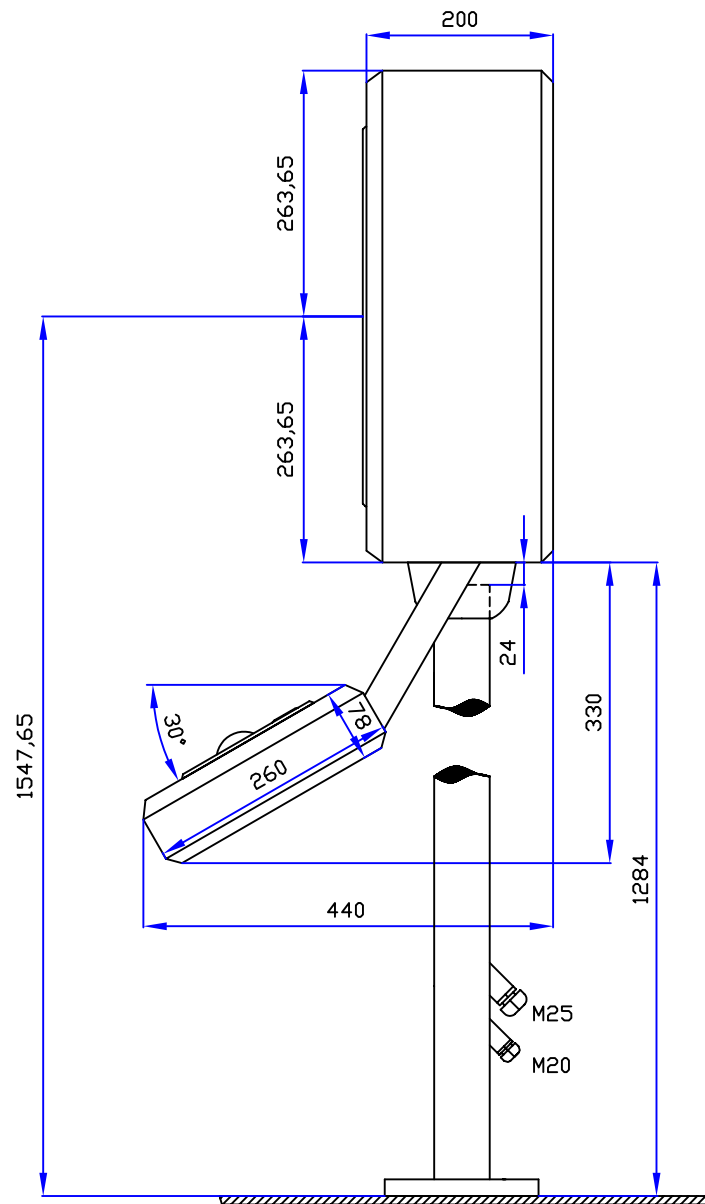
$$P_0 \leq P_i/P_{\max}$$

Where cable capacitance and inductance per foot are not known, the following values shall be used:
 $C_{\text{cable}} = 60 \text{ pF/ft}$, $L_{\text{cable}} = 0.2 \mu\text{H/ft}$

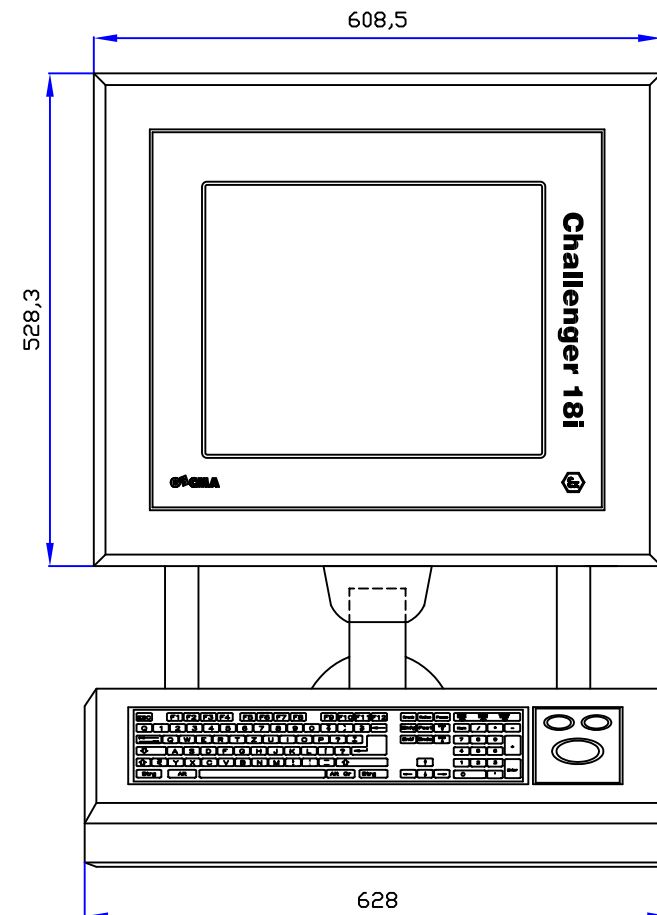
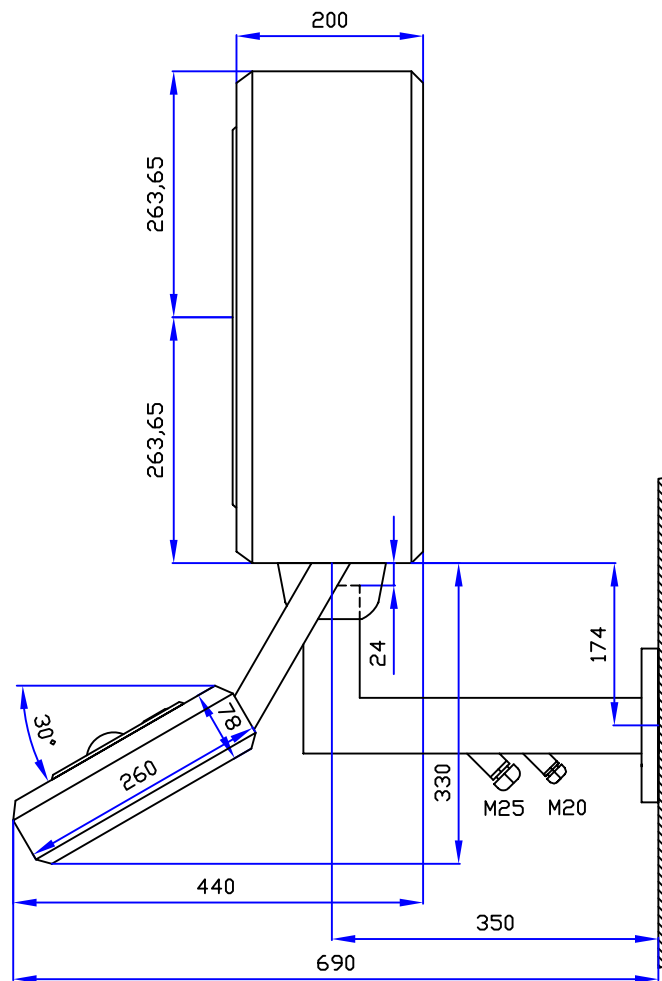
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				Geprüft:	Datum:
				Maßstab: 1 : 1	Gewicht:
				Werkstoff:	Oberfläche:
i	Add connections for 22 FMO at K40 and CR8	12.01.12	J.S	0 0	
h	Changed RS232 & Card Reader Power for 22" FMO	12.01.11	R.Quarry	Title:	
g	Touch Supply on K40	08.07.10	G.Hahn	Installation Plan	
f	Notes Supply, RSI, Touch, CR8			Challenger 15i/18i/22i	
e	Additional serial interface, Touch, CR8	20.10.04	A.Jung		
d	Change voltage and test	21.02.03	A.Jung		
c	Add information	20.02.03	A.Jung		
b	add test	07.02.03	A.Jung		
a	technical data, added PSU2	24.01.03	A.Jung	Zeichnungsnummer:	Blatt:
Rev	Änderung	Datum	Name	30100162	1/1



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			Zul.Abw.: Allgemeintoler. mittel DIN 7168	
g	FHP-2 enclosure	20.07.99	A.Jung	Titel:
f				FHP 15-2 Housing
e				STF with 1xM20 1xM25
d				
c				
b				
a				
Rev.	Änderung	Datum	Name	GeCma Components GmbH D-50169 Kerpen, Germany
				Zeichnungsnummer: 30100055
				Blatt: 1/1



			Ersteller: A.Jung	Datum: 06.07.2009
			Geprüft:	Datum:
			Maßstab: 1:1	Gewicht:
			Werkstoff:	Oberfläche:
			Zul.Abw.: Allgemeintoler. mittel DIN 7168	
g	FHP-2 enclosure	20.07.09	A.Jung	Titel:
f				FHP 18-2 Housing
e				STF with 1xM20 1xM25
d				
c				
b				
a				
Rev.	Änderung	Datum	Name	GeCma Components GmbH D-50169 Kerpen, Germany
				Zeichnungsnummer: 30100107
				Blatt: 1/1



			Ersteller: L. Tinner	Datum: 06.07.2009
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			Maßstab: 1:1	Gewicht:
			Verkstoff:	Oberfläche:
			Zul. Abw.: Allgemeintoler. mittel DIN 7168	
			Titel	
			FHP 18-2 Housing	
			EBF with 1xM20 1xM25	
e	FHP-2 enclosure	26.07.09	A. Jung	
d				
c				
b				
a				
Rev.	Änderung	Datum	Name	
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			D-50169 Kerpen, Germany	30100100
				Blatt:
				1/1

690

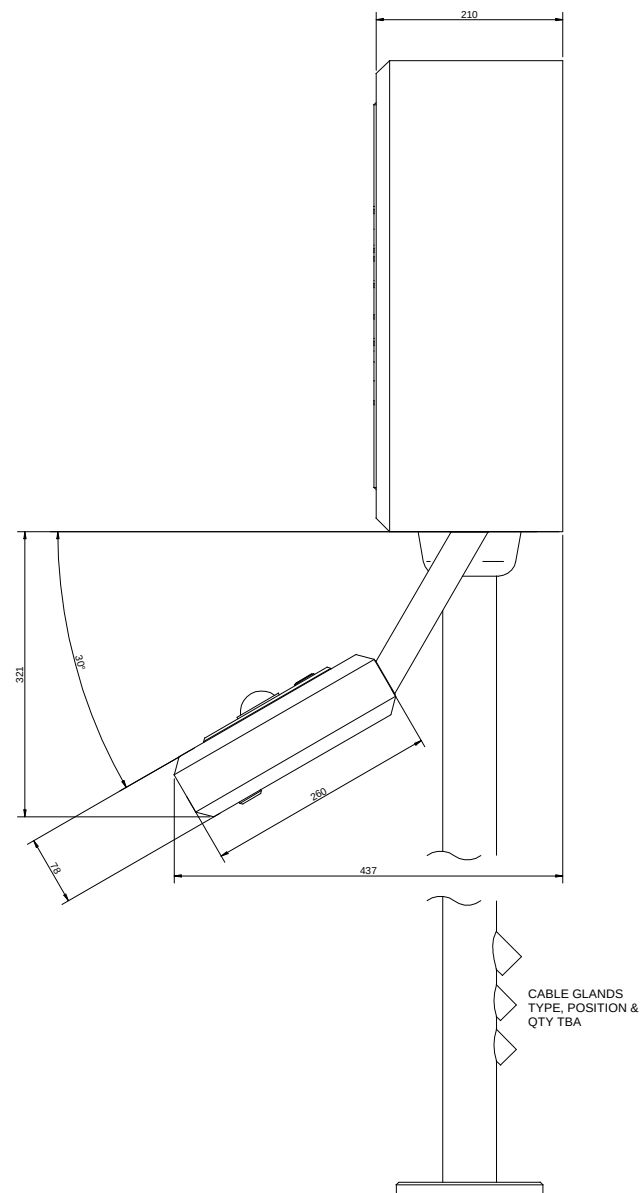
530

Challenger 221

1082 CENTRE OF SPACEBAR

628

1284

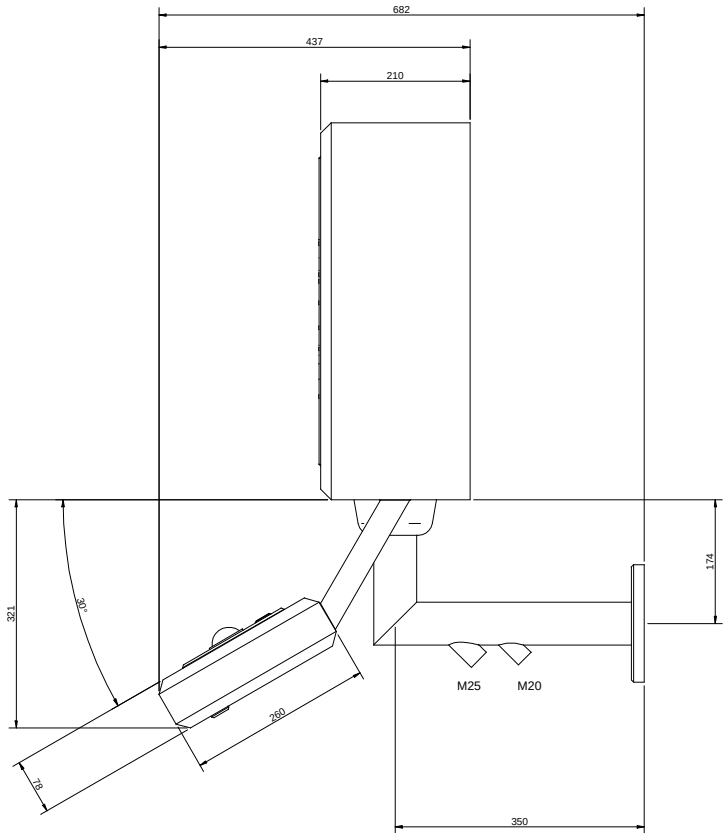
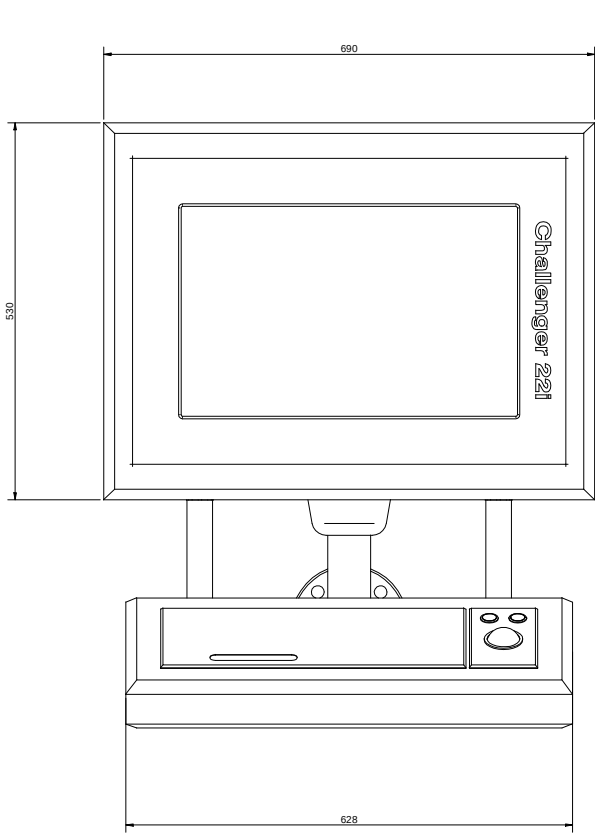


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Iss.	Description	Date	Name	D-50169 Kerpen, Germany		30102088		A	

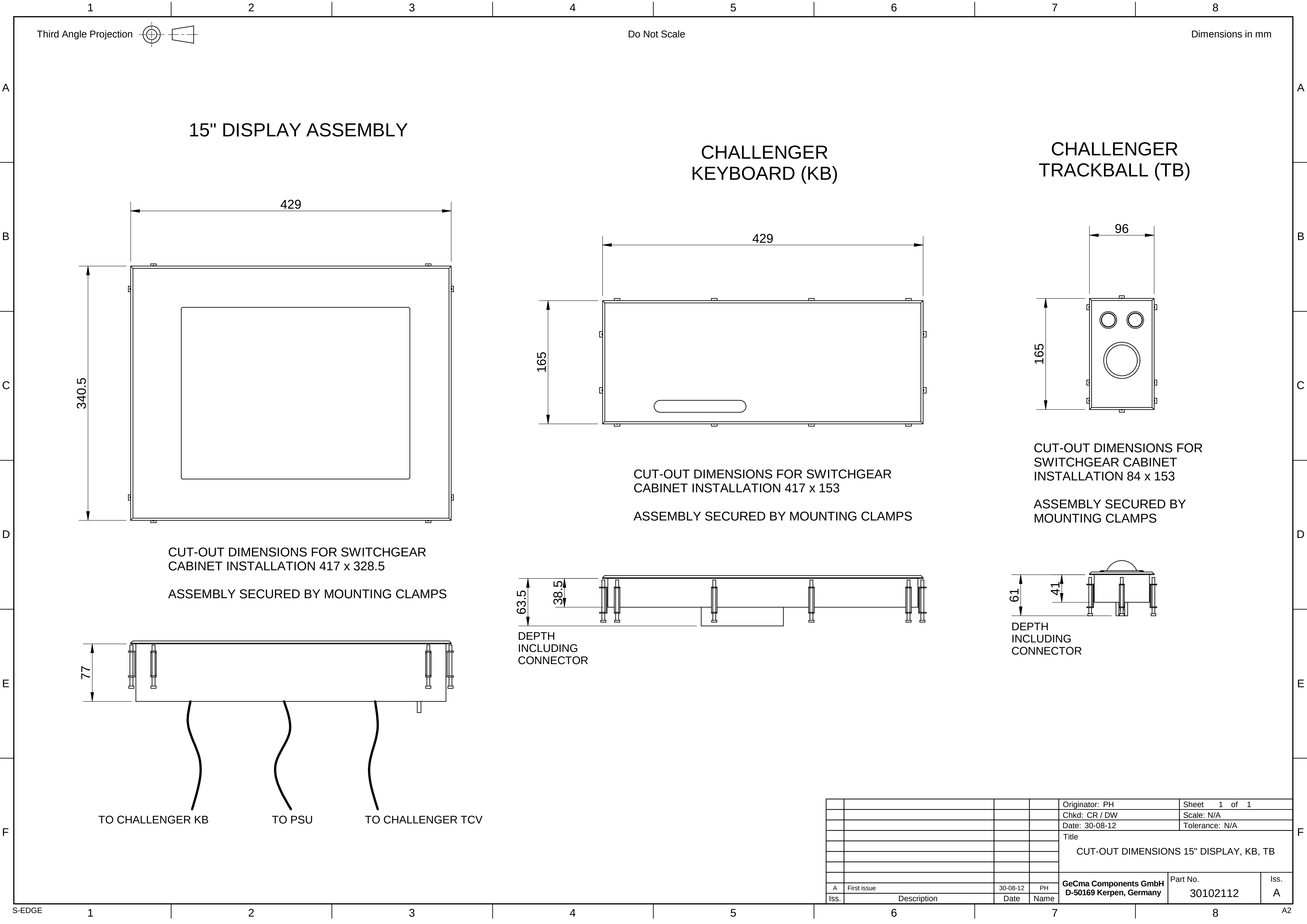
Third Angle Projection



Do Not Scale



				Originator: D WEBB	Sheet 1 of 1
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				GeCma Components GmbH D-50169 Kerpen, Germany	
A	First Issue	16.4.12	DW	Part No.	Iss.
Iss.	Description	Date	Name	30102089	A



15" DISPLAY ASSEMBLY

CHALLENGER
KEYBOARD (KB)

CHALLENGER
TRACKBALL (TB)

CUT-OUT DIMENSIONS FOR SWITCHGEAR
CABINET INSTALLATION 417 x 328.5
ASSEMBLY SECURED BY MOUNTING CLAMPS

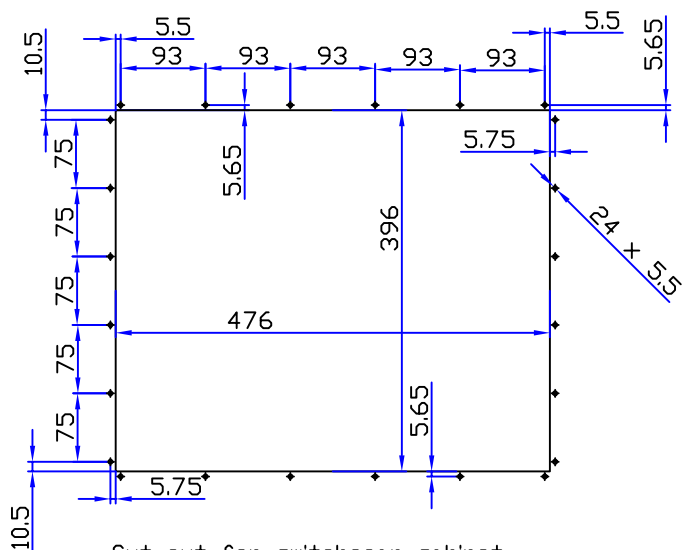
CUT-OUT DIMENSIONS FOR SWITCHGEAR
CABINET INSTALLATION 417 x 153
ASSEMBLY SECURED BY MOUNTING CLAMPS

CUT-OUT DIMENSIONS FOR
SWITCHGEAR CABINET
INSTALLATION 84 x 153
ASSEMBLY SECURED BY
MOUNTING CLAMPS

TO CHALLENGER KB TO PSU TO CHALLENGER TCV

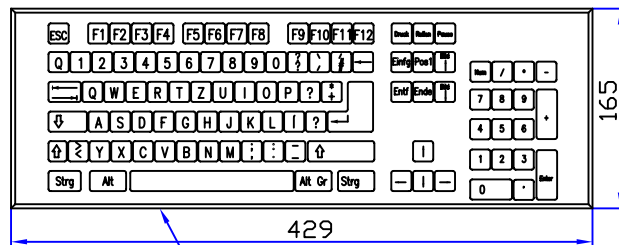
				Originator: PH	Sheet 1 of 1
				Chkd: CR / DW	Scale: N/A
				Date: 30-08-12	Tolerance: N/A
				Title CUT-OUT DIMENSIONS 15" DISPLAY, KB, TB	
A	First issue	30-08-12	PH	GeCma Components GmbH D-50169 Kerpen, Germany	
Iss.	Description	Date	Name		
				Part No. 30102112	Iss. A

Assembly—View 18-FM0 or similar



Cut out for swithgear cabinet
installation 476x396
Depth incl. Connector 107mm
outside dimension front frame 506x426
Mounting by bolts and nuts

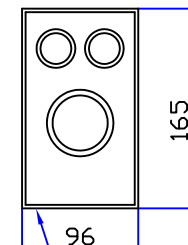
Plan-View



Challenger KB or similar

Cut out for switchgear cabinet
installation 417x153
Depth incl. Connector 60mm
Mounting by mountingclamps

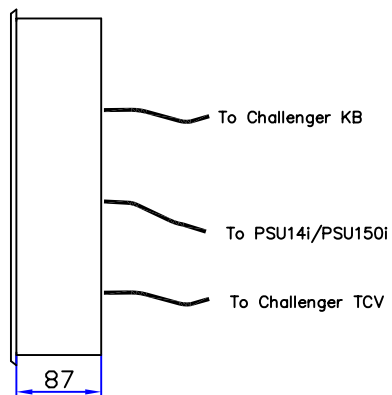
Plan-View



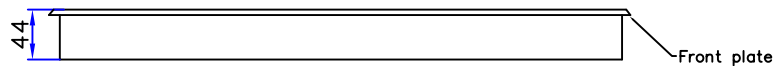
Challenger TB
or similar

Cut out for switehgear cabinet
installation 84x153
Depth incl. Connector 60mm
Mounting by mountingclamps

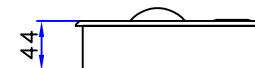
Side view



Side view



Side view



				created by	TE	date:	04.04.01
				checked by		date:	
				scale:	1 : 1	weight:	
				Material:		surface:	
				max. tolerance fein DIN 7168			
				title:			
				Cut out dimension			
				FMD, KB, TB			
c	details		2.07.00	A4ung			
a				GeChA Components GmbH		drawing no:	sheet
rev.	modification		date	IP-50169 Kerpen, Germany		30100098	1/1

615.6

9.36

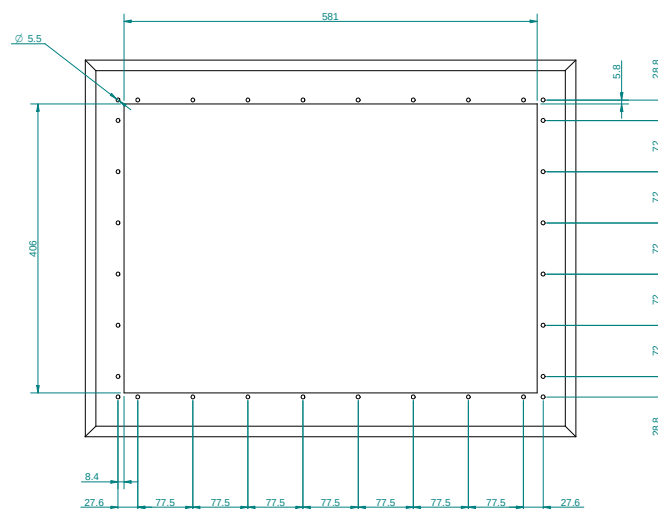
CHALLENGER 221

FMO

Diagram of the rear panel of the device. A dimension line at the top indicates a width of 88. The panel features several connection points labeled on the right:

- TO OTHER DEVICES
- TO POWERSUPPLY
- TO TRANSMISSION UNIT

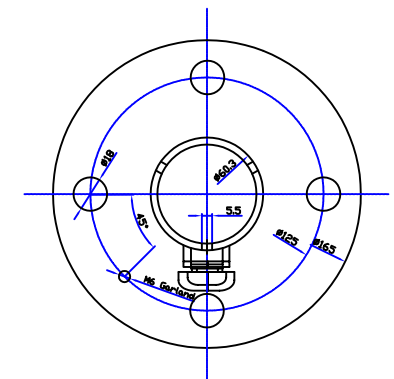
SIDE VIEW



DETAIL OF PANEL COUT OUT AND DRILLING PATERN FOR 22" DISPLAY

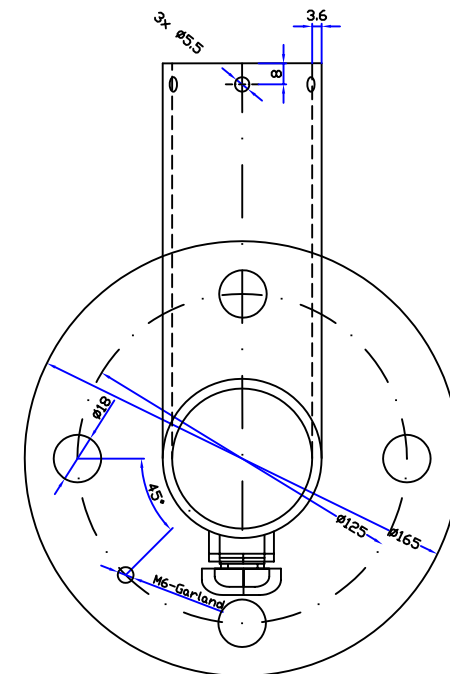
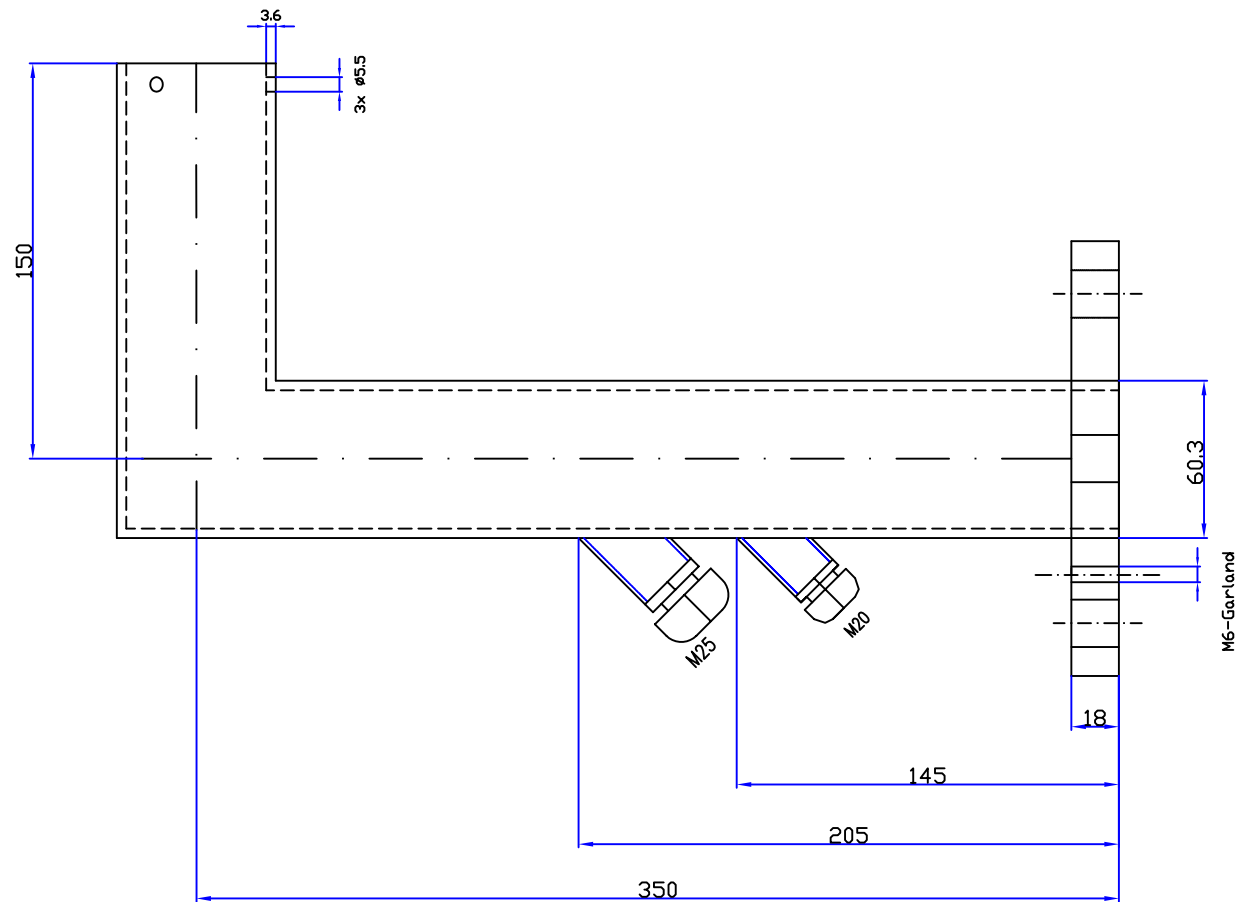
1. DEPTH INCLUDING CONNECTOR 115

				Originator: MICK LOWMAN	Sheet 1 of 1
				Chkd: N/A	Scale: N/A
				Date: 12.12.11	Tolerance: N/A
				Title	
				GENERAL VIEW CHALLENGER: FMO	
				22i-FMO	
B	FMO CUT OUT DETAILS ADDED DIMENSION 88 WAS 89	16.02.12	MJL		
A	First issue	12.12.11	MJL	GeComa Components GmbH D-50169 Kerpen, Germany	Part No. 10103530
Iss.	Description	Date	Name		B

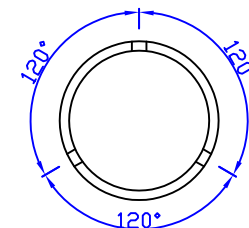


A diagram of a circular structure, likely a cross-section of a ring or a similar component. The circle is divided into three equal segments by three radial lines. Each segment is labeled with an angle of 120° , indicating that the segments are separated by 120° and each segment itself spans 120° .

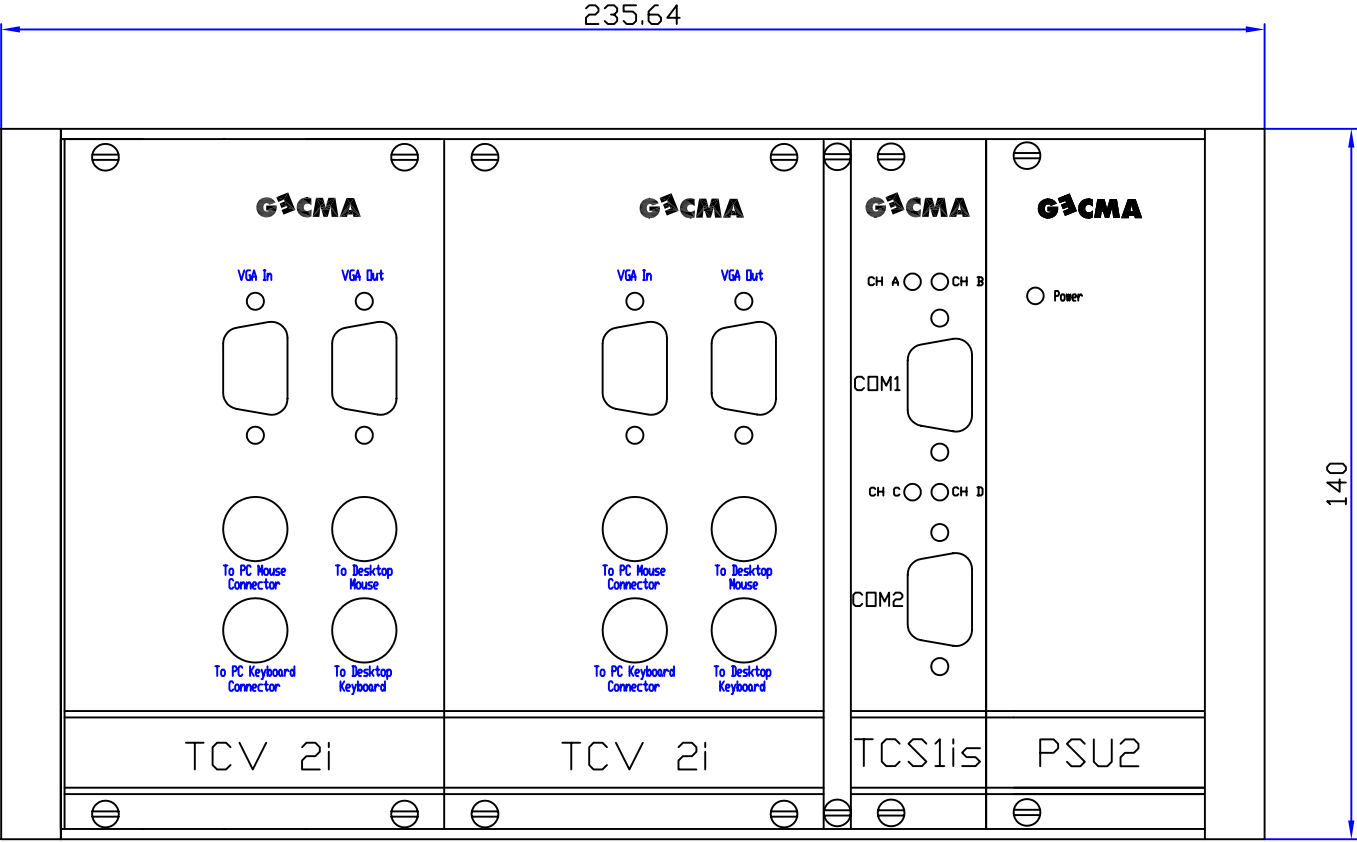
[illegible]



Position of 5,5mm holes (top view to pipe)

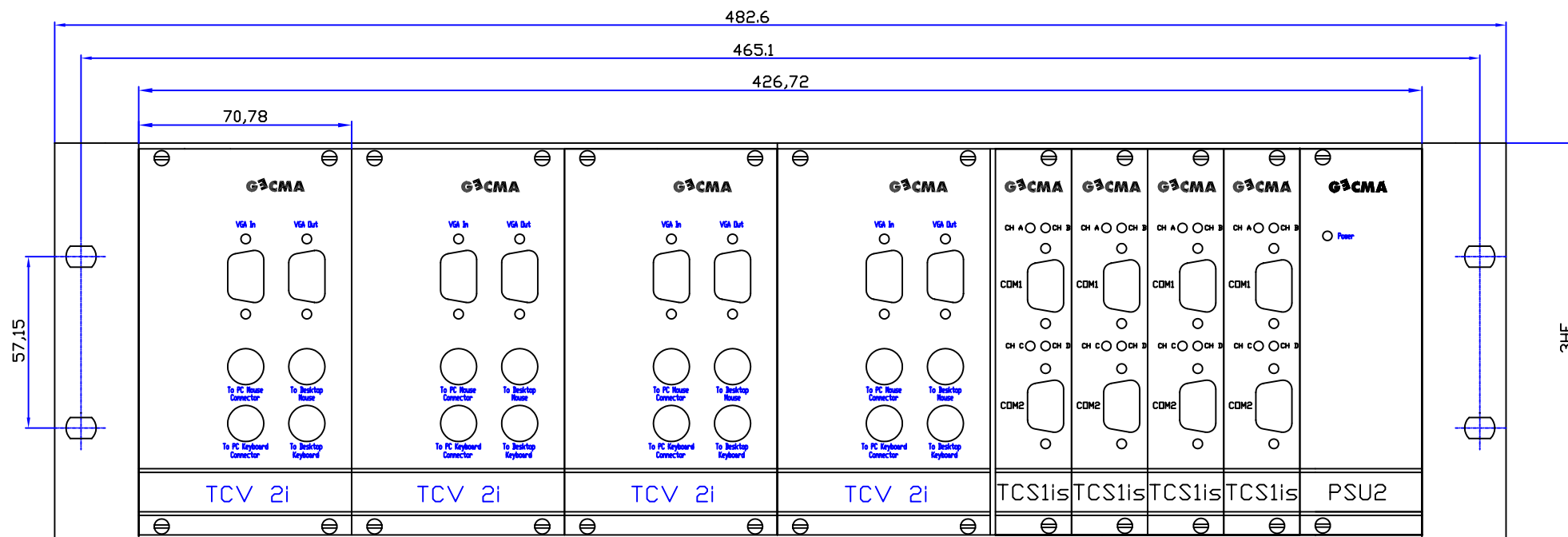


Ersteller:	A.Jung	Datum:	18.08.06
Geprüft:		Datum:	
Maßstab:	1 : 1	Gewicht:	
Verkstoff:		Oberfläche:	
Zul.Abw.:	Allgemeintoler. mittel DIN 7168		
Titel:			
Rohrbogen 2xM Verschraubung 350x150 mm			
GeCma Components GmbH		Zeichnungsnummer:	10100939
D-50169 Kerpen, Germany		Blatt:	1/1
Rev. Änderung	Datum	Name	



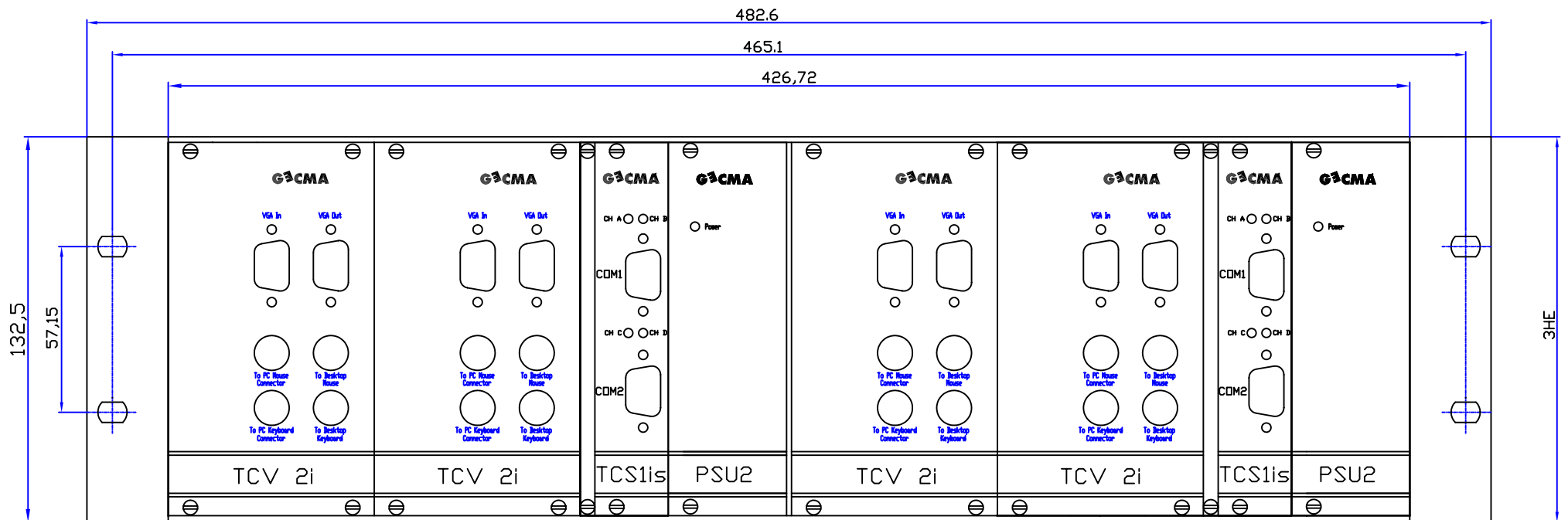
Depth incl. connector 300mm

				Ersteller:	A.Jung	Datum:	04.09.02
				Geprüft:		Datum:	
				Maßstab:	1 : 1	Gewicht:	
				Werkstoff:		Oberfläche:	
				Zul.Abw.:	Allgemeintoler. mittel DIN 7168		
				Titel:			
				Challenger Rack 42-2			
				Desktophousing			
				for 2xTCV, 1xTCS1is and PSU2			
a	Entwicklung entfernt, Front geändert	12.12.02	A.Jung	GeCma Components GmbH	Zeichnungsnummer:	Blatt:	
Rev.	Änderung	Datum	Name	D-50169 Kerpen, Germany	10100292 en	1/1	



Depth incl. connector 280mm

			Ersteller: A.Jung	Datum: 21.08.02
			Geprüft:	Datum:
			Maßstab: 1 : 1	Gewicht:
			Verkstoff:	Oberfläche:
			ZulAbw: Allgeneintoler. mittel DIN 7168	
			Titel:	
			Challenger	
			Rack 84-2	
			for 4xTCV,4xTCS1is and PSU2	
a	Vorschau entfernt, Name TCS	12.12.02	A.Jung	GeCma Components GmbH
Rev.	Änderung	Datum	Name	D-50169 Kerpen, Germany
				Zeichnungsnummer: 10100285 en
				Blatt: 1/1



Depth incl. connector 280mm

Both power supplies at rearside
must be connected to ensure
redundant option!

			Ersteller: A.Jung	Datum: 04.09.02
			Geprüft:	Datum:
			Maßstab: 1 : 1	Gewicht:
			Verkstoffs:	Überfläche:
			ZulAbw: Allgeneintoler. mittel DIN 7168	
			Titel:	
			Challenger	
			R84-2 Redundant	
			for 4xTCV, 2xTCS, and 2x PSU2	
a	Frontblenden, Beschriftung	12.12.02	A.Jung	GeCma Components GmbH
Rev.	Änderung	Datum	Name	D-50169 Kerpen, Germany
				Zeichnungsnummer: 10100291 en
				Blatt: 1/1



Translation

EC-Type Examination Certificate

- Directive 94/9/EC -

Equipment and protective systems intended for use
in potentially explosive atmospheres

DMT 00 ATEX E 089 X

- (4) **Equipment:** Terminal type Challenger **** with transmitter module type TCV 2i
- (5) **Manufacturer:** GeCma Components GmbH
- (6) **Address:** D - 50169 Kerpen
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the schedule to this type examination certificate.
- (8) The certification body of Deutsche Montan Technologie GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in the test and assessment report BVS PP 00.2084 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- EN 50014:1997+A1-A2 General requirements
EN 50020 :1994 Intrinsic Safety
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate
- (12) The marking of the equipment shall include the following:

Ex II 2G EEx ib IIC T4 for the terminal
II (2)G [EEx ib] IIC for the transmitter module

Deutsche Montan Technologie GmbH
Essen, dated 29.December 2000

Signed: Jockers

Signed: Dill

DMT-Certification body

Head of special services unit



Appendix to

EC-Type Examination Certificate

DMT 00 ATEX E 089 X

15.1 Subject and type

Terminal type Challenger **** with transmitter module type TCV 2i

Instead of the **** letters and numerals will be placed to indicate different versions; the following variations are available:

Device type	Version
Challenger 18i-FMO	Control panel mounting, 18" monitor
Challenger 15i-FMO	Control panel mounting, 15" monitor
Challenger 15i-2-FMO	Control panel mounting, 15" monitor
Challenger KMU	Control panel mounting, keyboard and mouse
Challenger KB	Control panel mounting, keyboard
Challenger TB	Trackball
Challenger M	Mouse
Challenger MTD	Mouse/trackball decoder
transmitter module TCV 2i	19" plug-in unit consisting of: transmitter module, power supply module and keyboard/mouse encoder

15.2 Description

The terminal is used in conjunction with a transmitter module, which is located outside the hazardous area, for the visualisation of data and processes and for data entry via the keyboard or mouse.

The electronic components in the terminal are securely mounted in a metal housing. A viewing panel and an additional keyboard are located on the front of the housing.

The intrinsically-safe circuits are connected using terminals situated behind a cover on the rear of the housing. The electronic components of the transmitter module are installed in a plug-in unit that plugs into the mounting rack.

15.3 Parameters

15.3.1 Challenger 18i-FMO and Challenger 15i-2-FMO terminals

15.3.1.1 Terminal strip K1: power supply circuits

Terminals 3 - 4, 5 - 6, 7 - 8, 11 - 12, 13 - 14 and 15 - 16

Data per circuit

Voltage	Ui	DC	12,5	V
Current	Ii		543	mA
Output	Pi		6,8	W
Effective internal capacitance	Ci	Negligible		
Effective internal inductance	Li	Negligible		



15.3.1.2 Terminal strips K2 and K3: power supply circuits

Terminals 1 - 2 on each strip				
Voltage	U _i	DC	12,5	V
Current	I _i		543	mA
Output	P _i		6,8	W
Effective internal capacitance	C _i	Negligible		
Effective internal inductance	L _i	Negligible		

15.3.1.3 Terminal strip K4 for connection of Challenger KMU, Challenger KB and Challenger MTD using a cable up to 5 m in length

Voltage	U _i	DC	5,5	V
Current	I _i		71	mA

15.3.1.4 Terminal strip K5 for connection of data cables of Challenger TCV 2i transmitter module

Data per cable pair				
Voltage	U _i	DC	±5,5	V
Effective internal capacitance	C _i	Negligible		
Effective internal inductance	L _i	Negligible		

15.3.1.5 Video input (terminal X2)

Voltage	U _o		2	V
Current	I _o		85	mA
Output	P _o		170	mW
Effective internal capacitance	C _o		100	µF
Effective internal inductance	L _o		4	mH

To connect an intrinsically-safe video circuit with the following maximum values:

Voltage	U _i		6	V
Current	I _i		188	mA
Output	P _i		194	mW
Effective internal capacitance	C _i	Negligible		
Effective internal inductance	L _i	Negligible		

15.3.1.6 Terminal strip K9 for connection of Challenger KMU, Challenger KB and Challenger MTD using a cable up to 5 m in length

Voltage	U _o	DC	5,5	V
Current	I _o		71	mA

15.3.1.7 Ambient temperature range

T _a	-10 °C to + 60 °C
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15.3.2 Challenger 18i-FMO and Challenger 15I-2-FMO terminals

15.3.2.1 Terminal strip K1: power supply circuits

Terminals 3 - 4, 5 - 6, 7 - 8, 11 - 12, 13 - 14 and 15 - 16

Data per circuit				
Voltage	U _i	DC	13	V
Current	I _i		468	mA
Output	P _i		5,85	W
Effective internal capacitance	C _i	Negligible		
Effective internal inductance	L _i	Negligible		



15.3.2.2 Terminal strips K2 and K3: power supply circuits

Terminals 1 - 2 on each strip				
Voltage	U _i	DC	13	V
Current	I _i		468	mA
Effective internal capacitance	C _i	Negligible		
Effective internal inductance	L _i	Negligible		

15.3.2.3 Terminal strip K4 for connection of Challenger KMU, Challenger KB and Challenger MTD using a cable up to 5 m in length

Voltage	U _o	DC	5,5	V
Current	I _o		71	mA

15.3.2.4 Terminal strip K5 for connection of data cables of Challenger TCV 2i transmitter module

Values per cable pair				
Voltage	U _i	DC	±5,5	V
Effective internal capacitance	C _i	Negligible		
Effective internal inductance	L _i	Negligible		

15.3.2.5 Ambient temperature range

T _a	-10 °C to + 60 °C
----------------	-------------------

15.3.3 Challenger KB, Challenger KMU and Challenger MTD

15.3.3.1 Terminal strip K11 (terminals 1 - 10) for connection of terminals (terminal strip K4)

Voltage	U _i	DC	5,5	V
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15.3.3.2 Terminal strip K12 (terminals 11 - 16) for connecting Challenger TB or Challenger M

Voltage	U _o	DC	5,5	V
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15.3.3.3 Terminal strip K13 (terminals 17, 18) and terminal strip K12 or connecting voltage-free switches/pushbuttons

Voltage	U _o	DC	5,5	V
Current	I _o		1	mA

15.3.3.4 Ambient temperature range

T _a	-10 °C to + 60 °C
----------------	-------------------

15.3.4 Challenger TB and Challenger M for connecting to Challenger KB, Challenger KMU and Challenger MTD (terminal strip K11, terminals 11 - 16)

Voltage	U _i	DC	5,5	V
---------	----------------	----	-----	---

Ambient temperature range	T _a	-10 °C to + 60 °C
---------------------------	----------------	-------------------

15.3.5 TCV 2I transmitter module

15.3.5.1 Non-intrinsically safe electric circuits on the ± 12 V terminals, keyboard and mouse PS2 interfaces, RS-485 and VGA input/VGA output

Max. fault voltage	U _m	AC	250	V
--------------------	----------------	----	-----	---



15.3.5.2 Connector ST10: intrinsically safe electric circuits for connection to the terminal (terminal strip K5)

Voltage	Uo	DC	5,5	V
Current	Io		105	mA

15.3.5.3 Ambient temperature range

Ta	-10 °C to + 60 °C
----	-------------------

(16) Test and assessment report
BVS PP 00.2084 EG as of 29.12.2000

(17) Special conditions for safe use

The following applies to the transmission module type Challenger TCV 2i:

17.1 The transmission module has to be installed outside the hazardous area in such a way that the connecting components will satisfy the requirements of IP20.

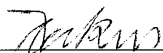
17.2 The connecting components for the external intrinsically-safe circuits of the transmission module are to be laid out so that bare parts are at least 50 mm away from connecting components or bare wires of non-intrinsically safe circuits or are separated from them by a barrier conforming to 6.4.1. of EN 50020:1994.

17.3 The transmission module has to be installed in the rack in such a way that there is a distances in air of at least 1.5 mm between bare parts of the intrinsically-safe circuits and the metal housing and of at least 6 mm between bare parts of the intrinsically-safe circuits and bare parts of non-intrinsically safe circuits.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

45307 Essen, 19.02.2001
BVS-Schu/Ar A 2000641

Deutsche Montan Technologie GmbH


DMT-Certification body


Head of special services unit



1. Supplement

(Supplement in accordance with Directive 94/9/EG Appendix III No. 6)

to EC Type Examination Certificate DMT 00 ATEX E 089 X

Equipment: Terminal Type Challenger*** with Data Transmission Card Type TCV2i

Manufacturer: GeCma Components GmbH

Adress: D 50169 Kerpen

Description

The Challenger*** terminal can also be manufactured according to the illustrative documents listed below.
Modified versions of the equipment are produced:

Keyboard with Mouse Type Challenger KMU-2*
Keyboard Type KB-2*
Mouse/Trackball Decoder Type MTD-2*
Barrier Network Type BCBN1i
Keyboard with Mouse Type Challenger KMU-2-BCBN*
Keyboard Type KB-2-BCBN*
Mouse/Trackball Decoder Type MTD-2-BCBN*

The Essential Health and Safety Requirements are assured by compliance with:

EN 50014:1997+A1-A2 General requirements
EN 50020:1994 Intrinsic Safety i

Parameters

1	Terminal Type Challenger 18i-FMO and Type Challenger 15i-2-FMO			
1.1	Video-Input (Connector X2)			
	Voltage	Uo	2.5	V
	Current	Io	88	mA
	Power	Po	176	mW
	Max external inductance	Lo	4	mH
	Max external capacitance	Co	100	µF

To connect an intrinsically safe Video Circuit with the following maximum values

Voltage	Ui	6	V
Current	Ii	188	mA
Power	Pi	194	mW
Effective internal inductance	Li	negligible	
Effective internal capacitance	Ci	negligible	

- 1.2 Connector K9 to connect unit types Challenger KMU-*, Challenger KB-* or Challenger MTD-*
Terminals 1 and 2: Power supply output, for use with the circuit on connector K3

Voltage	Uo	DC	12.5	V
Current	Io		543	mA
Power	Po		6.8	W
Maximum external capacitance and inductance depends on the power supply used. (Connection to terminals on K3) from Terminals 3 to 7 Signal circuits				
Voltage	Uo	DC	5.5	V
Current	Io		71	mA

- 2 Unit Type KMU-2D, KB-2D and MTD-2D

- 2.1 Output-(Power Supply-)Circuits (Connector. K14-5 and K14-1)

Voltage	Uo	DC	5.43	V
Current	Io		356	mA
Power	Po		1.1	W
Max external inductance	Lo		280	μH
Max external capacitance	Co		58	μF

- 2.2 RS232 Input (Connector. K14-4, K14-6 and K14-7)

Voltage	Uo	DC	5.43	V
Current	Io		3.8	mA
Power	Po		5.7	mW
Max external inductance	Lo		2	mH
Max external capacitance	Co		58	μF

- 2.3 RS232 Output (Connector. K14-8, K14-9 and K14-11)

Voltage	Uo	DC	10.8	V
Current	Io		15	mA
Power	Po		47	mW
Max external inductance	Lo		150	μH
Max external capacitance	Co		2	μF

- 3 Unit Type KMU-2S, KB-2S and MTD-2S

- 3.1 Output-(Power Supply-)Circuits (Connector. K14-5 and K14-1)

Voltage	Uo	DC	5.43	V
Current	Io		356	mA
Power	Po		1.1	W
Max external inductance	Lo		280	μH
Max external capacitance	Co		31	μF

- 3.2 RS232 Input (Connector. K14-4, K14-6 and K14-7)

Voltage	Uo	DC	5.43	V
Current	Io		3.8	mA
Power	Po		5.7	mW
Max external inductance	Lo		2	mH
Max external capacitance	Co		58	μF

- 3.3 RS232 Output (Connector. K14-8, K14-9 and K14-11)

Voltage	Uo	DC	10.8	V
Current	Io		15	mA
Power	Po		47	mW
Max external inductance	Lo		150	μH
Max external capacitance	Co		2	μF

- 4 Barrier Network Type BCBN1i

- 4.1 Power Supply Input Circuit (Connector. K17-1 and K17-2)

Voltage	Ui	DC	12.5	V
Max internal inductance	Li			negligible
Max internal capacitance	Ci			negligible

- 4.2 Power Supply Circuits (Connector. K16)

Connection	Uo (V)	Io (mA)	Po (mW)	Co (μF)	Lo (μH)
K16-13 – K16-16	6	470	1467	40	160
K16-11 – K16-16	6	362	1128	40	270
K16-9 – K16-16	6	183	571	40	1000
K16-7 – K16-16	6	97	303	40	3700
K16-5 – K16-16	6	49	153	40	14000
K16-3 – K16-16	6	24	74	40	60000
K16-1 – K16-16	6	12	38	40	240000

- 5 Unit Type KMU-2-BCBN*, KB-2-BCBN* and MTD-2-BCBN*

- 5.1 Output-(Power Supply-)Circuits (Connector. K14-5 and K14-1)

Voltage	Uo	DC	5.43	V
Current	Io		356	mA
Power	Po		1.1	W
Max external inductance	Lo		280	μH
Max external capacitance	Co		58	μF

- 5.2 RS232 Input (Connector. K14-4, K14-6 and K14-7)

Voltage	Uo	DC	6	V
Current	Io		3.8	mA
Power	Po		5.7	mW
Max external inductance	Lo		2	mH
Max external capacitance	Co		40	μF

- 5.3 RS232 Output (Connector. K14-8, K14-9 and K14-11)

Voltage	Uo	DC	10.8	V
Current	Io		15	mA
Power	Po		47	mW
Max external inductance	Lo		150	μH
Max external capacitance	Co		2	μF

- 6 The Data Cable between the Data Transmission Card Type TCV2i and the Terminal Type Challenger 18i-FMO, 15i-FMO and 15i-2-FMO

Loop Resistance	> 15 Ω/km
Insulation Resistance	> 50 MΩ x km
Cable Capacitance	< 120 nF/km
Cable Inductance	< 1400 μH/km
Test Voltage – Core to Core	> 1000 Veff
Test Voltage – Core to Screen	> 500 Veff
Radial insulation thickness	> 0.2 mm
Diameter of copper core	> 0.1 mm
Installation Temperature Range	-10 °C to 60 °C
Maximum Length	600 metres

Test Report

BVS PP 00.2084 EG, Date 27.09.2002

Special requirements/conditions for safe use

The following applies to the Challenger TCV 2i transmitting module:

- 1 The transmitting module must be installed outside the hazardous area in such a way that the terminals are protected to IP 20.
- 2 The terminals for the external intrinsically-safe circuits of the transmitting module are to be arranged so that there is a gap of at least 50 mm between the bare parts and the terminals or bare conductors of non intrinsically-safe circuits, or they should be separated from them by means of a barrier in accordance with 6.4.1 of EN 50020: 1994.
- 3 When installing the transmitting module in a mounting rack, there must be an air gap of at least 1.5 mm between the bare parts of the intrinsically safe circuit and metallic parts of the housing and at least 6 mm to the bare parts of non intrinsically-safe circuits.

Deutsche Montan Technologie GmbH

Essen, 27 September 2002

DMT-Certification body

Head of special service unit



EG-Baumusterprüfbescheinigung

- Richtlinie 94/9/EG -

**Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung
in explosionsgefährdeten Bereichen**

DMT 00 ATEX E 089 X

- (4) **Gerät:** Terminal Typ Challenger **** mit Sende-Baugruppe Typ TCV 2i
- (5) **Hersteller:** GeCma Components GmbH
- (6) **Anschrift:** 50169 Kerpen
- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.
- (8) Die Zertifizierungsstelle der Deutsche Montan Technologie GmbH, benannte Stelle Nr. 0158 gemäß Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlaments und des Rates vom 23. März 1994, bescheinigt, dass das Gerät die grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie erfüllt.
Die Ergebnisse der Prüfung sind in dem Prüfprotokoll BVS PP 00.2084 EG niedergelegt.
- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit
EN 50014:1997 + A1 – A2 Allgemeine Bestimmungen
EN.50020:1994 Eigensicherheit 'i'
- (10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird in der Anlage zu dieser Bescheinigung auf besondere Bedingungen für die sichere Anwendung des Gerätes hingewiesen.
- (11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und die Baumusterprüfung des beschriebenen Gerätes in Übereinstimmung mit der Richtlinie 94/9/EG.
Für Herstellung und Inverkehrbringen des Gerätes sind weitere Anforderungen der Richtlinie zu erfüllen, die nicht durch diese Bescheinigung abgedeckt sind.
- (12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:



II 2G EEx ib IIC T4

für das Terminal

II (2)G [EEx ib] IIC

für die Sende-Baugruppe

Deutsche Montan Technologie GmbH

Essen, den 29. Dezember 2000

DMT-Zertifizierungsstelle

Fachbereichsleiter



(13)

Anlage zur

(14)

EG-Baumusterprüfbescheinigung

DMT 00 ATEX E 089 X

(15) 15.1 Gegenstand und Typ

Terminal Typ Challenger **** mit Sende-Baugruppe Typ TCV 2i

Anstelle der *** werden Buchstaben und Ziffern eingefügt, die unterschiedliche Ausführungen kennzeichnen; die folgenden Varianten sind möglich:

Gerätetyp:	Ausführung:
Challenger 18i-FMO	Schalttafeleinbau Monitor 18"
Challenger 15i-FMO	Schalttafeleinbau Monitor 15"
Challenger 15i-2-FMO	Schalttafeleinbau Monitor 15"
Challenger KMU	Schalttafeleinbau Tastatur und Maus
Challenger KB	Schalttafeleinbau Tastatur
Challenger TB	Trackball
Challenger M	Maus
Challenger MTD	Maus- / Trackball-Decoder
Sende-Baugruppe TCV 2i	19"-Kassette bestehend aus: Sendeinheit, Versorgungseinheit und dem Tastatur-Maus-Encoder

15.2 Beschreibung

Das Terminal dient in Verbindung mit der Sende-Baugruppe, die außerhalb des explosionsgefährdeten Bereiches errichtet wird, zur Visualisierung von Daten und Prozessabläufen sowie zur Eingabe von Daten über eine Tastatur bzw. eine Maus.

Die elektrischen Bauteile des Terminals sind in einem Metallgehäuse gesichert befestigt. An der Frontseite des Gehäuses sind eine Sichtscheibe bzw. zusätzlich eine Tastatur angeordnet.

Der Anschluss der eigensicheren Stromkreise erfolgt über Klemmen, die an der Rückseite des Gehäuses unter einer Abdeckung angeordnet sind.

Die elektrischen Bauteile der Sende-Baugruppe sind in einer Kassette untergebracht, die zum Einstecken in einen Baugruppenträger vorgesehen ist.

15.3 Kenngrößen

15.3.1 Terminal Typ Challenger 18i-FMO und Typ Challenger 15i-2-FMO

15.3.1.1 Klemmleiste K1: Versorgungsstromkreise
Klemmen 3 - 4, 5 - 6, 7 - 8, 11 - 12, 13 - 14 und 15 - 16

Werte je Kreis				
Spannung	Ui	DC	12,5	V
Stromstärke	Ii		543	mA
Leistung	Pi		6,8	W
wirksame innere Kapazität	Ci	vernachlässigbar		
wirksame innere Induktivität	Li	vernachlässigbar		



15.3.1.2 Klemmleiste K2 und K3: Versorgungsstromkreise

Klemmen je Klemmleiste 1 - 2				
Spannung	Ui	DC	12,5	V
Stromstärke	Ii		543	mA
Leistung	Pi		6,8	W
wirksame innere Kapazität	Ci	vernachlässigbar		
wirksame innere Induktivität	Li	vernachlässigbar		

15.3.1.3 Klemmleiste K4 zum Anschluss des Gerätes Typ Challenger KMU, Typ Challenger KB und Typ Challenger MTD über eine bis zu 5 m lange Leitung

Spannung	Uo	DC	5,5	V
Stromstärke	Io		71	mA

15.3.1.4 Klemmleiste K5: zum Anschluss der Datenleitungen der Sende-Baugruppe Typ Challenger TCV 2i, Werte je Leitungspaar

Spannung	Ui	DC	± 5,5	V
wirksame innere Kapazität	Ci	vernachlässigbar		
wirksame innere Induktivität	Li	vernachlässigbar		

15.3.1.5 Video-Eingang (Klemmen X2)

Spannung	Uo		2	V
Stromstärke	Io		85	mA
Leistung	Po		170	mW
max. äußere Induktivität	Lo		4	mH
max. äußere Kapazität	Co		100	µF

zum Anschluss eines eigensicheren Video-Stromkreises mit den folgenden Höchstwerten:

Spannung	Ui		6	V
Stromstärke	Ii		188	mA
Leistung	Pi		194	mW
wirksame innere Kapazität	Ci	vernachlässigbar		
wirksame innere Induktivität	Li	vernachlässigbar		

15.3.1.6 Klemmleiste K9 zum Anschluss des Gerätes Typ Challenger KMU, Typ Challenger KB und Typ Challenger MTD über eine bis zu 5 m lange Leitung

Spannung	Uo	DC	5,5	V
Stromstärke	Io		71	mA

15.3.1.7 Umgebungstemperaturbereich Ta -10 °C bis +60 °C

15.3.2 Terminal Typ Challenger 15i-FMO

15.3.2.1 Klemmleiste K1: Versorgungsstromkreise
Klemmen 3 - 4, 5 - 6, 7 - 8, 9 - 10, 11 - 12, 13 - 14 und 15 - 16

Werte je Kreis				
Spannung	Ui	DC	13	V
Stromstärke	Ii		468	mA
Leistung	Pi		5,85	W
wirksame innere Kapazität	Ci	vernachlässigbar		
wirksame innere Induktivität	Li	vernachlässigbar		



15.3.2.2 Klemmleiste K2 und K3: Versorgungsstromkreise

Klemmen je Klemmleiste 1 - 2				
Spannung	Ui	DC	13	V
Stromstärke	Ii		468	mA
wirksame innere Kapazität	Ci	vernachlässigbar		
wirksame innere Induktivität	Li	vernachlässigbar		

15.3.2.3 Klemmleiste K4 zum Anschluss des Gerätes Typ Challenger KMU, Typ Challenger KB und Typ Challenger MTD über eine bis zu 5 m lange Leitung

Spannung	Uo	DC	5,5	V
Stromstärke	Io		71	mA

15.3.2.4 Klemmleiste K5: zum Anschluss der Datenleitungen der Sende-Baugruppe Typ Challenger TCV 2i, Werte je Leitungspaar

Spannung	Ui	DC	± 5,5	V
wirksame innere Kapazität	Ci	vernachlässigbar		
wirksame innere Induktivität	Li	vernachlässigbar		

15.3.2.5 Umgebungstemperaturbereich

Ta	-10 °C bis +60 °C
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15.3.3 Typ Challenger KB, Typ Challenger KMU und Typ Challenger MTD

15.3.3.1 Klemmleiste K11 (Anschl. 1 - 10) zum Anschluss des Terminals (Klemmleiste K4)

Spannung	Ui	DC	5,5	V
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15.3.3.2 Klemmleiste K11 (Anschl. 11 - 16) zum Anschluss des Gerätes Typ Challenger TB oder Typ Challenger M

Spannung	Uo	DC	5,5	V
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15.3.3.3 Klemmleiste K11 (Anschl. 17, 18) und Klemmleiste K12 zum Anschluss von potentialfreien Schaltern/Tastern

Spannung	Uo	DC	5,5	V
Stromstärke	Io		1	mA

15.3.3.4 Umgebungstemperaturbereich

Ta	-10 °C bis +60 °C
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15.3.4 Typ Challenger TB und Typ Challenger M zum Anschluss an die Geräte Typ Challenger KB, Typ Challenger KMU und Typ Challenger MTD (Klemmleiste K11 Anschl. 11 - 16)

Spannung	Ui	DC	5,5	V
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Umgebungstemperaturbereich	Ta	-10 °C bis +60 °C
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15.3.5 Sende-Baugruppe Typ TCV 2i

15.3.5.1 nichteigensichere Stromkreise an den Anschlüssen ± 12 V, PS2-Anschlüsse Tastatur und Maus, RS-485 und VGA-Eingang/VGA-Ausgang

max. Fehlerspannung	Um	AC	250	V
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15.3.5.2 Stecker ST10: eigensichere Stromkreise zum Anschluss an das Terminal (Klemmleiste K5)

Spannung	Uo	DC	5,5	V
Stromstärke	Io		105	mA

15.3.5.3 Umgebungstemperaturbereich

Ta	-10 °C bis +60 °C
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- (16) Prüfprotokoll
BVS PP 00.2084 EG, Stand 29.12.2000

- (17) Besondere Bedingungen für die sichere Anwendung

Für die Sende-Baugruppe Typ Challenger TCV 2i gilt:

- 17.1 Die Sende-Baugruppe muss außerhalb des explosionsgefährdeten Bereiches so errichtet werden, dass für die Anschlusssteile die Schutzart IP 20 gewährleistet wird.
- 17.2 Die Anschlusssteile für die äußeren eigensicheren Stromkreise der Sende-Baugruppe sind so anzuordnen, dass die blanken Teile mindestens 50 mm von Anschlusssteilen oder blanken Leitern nichteigensicherer Stromkreise entfernt oder von diesen durch eine Trennwand nach 6.4.1 von EN 50020:1994 getrennt sind.
- 17.3 Der Einbau der Sende-Baugruppe in einen Baugruppenträger hat so zu erfolgen, dass die Luftstrecken von blanken Teilen der eigensicheren Stromkreise zu den metallischen Gehäuseteilen mindestens 1,5 mm und zu blanken Teilen nichteigensicherer Stromkreise mindestens 6 mm betragen.



1. Nachtrag

(Ergänzung gemäß Richtlinie 94/9/EG Anhang III Ziffer 6)

zur EG-Baumusterprüfbescheinigung DMT 00 ATEX E 089 X

Gerät: Terminal Typ Challenger **** mit Sende-Baugruppe Typ TCV 2i
Hersteller: GeCma Components GmbH
Anschrift: D - 50169 Kerpen

Beschreibung

Das Terminal Typ Challenger **** kann auch nach den im zugehörigen Prüfprotokoll aufgeführten Prüfungsunterlagen gefertigt werden und man erhält geänderte Ausführungen:

Tastatur mit Maus Typ Challenger KMU-2*
Tastatur Typ Challenger KB-2*
Maus-/Trackball-Decoder Typ MTD-2*
Barrieren-Netzwerk Typ BCBN1i
Tastatur mit Maus Typ Challenger KMU-2-BCBN*
Tastatur Typ Challenger KB-2-BCBN*
Maus-/Trackball-Decoder Typ MTD-2-BCBN*

Die grundlegenden Sicherheits- und Gesundheitsanforderungen der geänderten Ausführung werden erfüllt durch Übereinstimmung mit

EN 50014:1997 + A1 – A2 Allgemeine Bestimmungen
EN 50020:1994 Eigensicherheit 'i'

Kenngrößen

1 Terminal Typ Challenger 18i-FMO und Typ Challenger 15i-2-FMO

1.1 Video-Eingang (Klemmen X2)			
Spannung	Uo	2,5	V
Stromstärke	Io	88	mA
Leistung	Po	176	mW
max. äußere Induktivität	Lo	4	mH
max. äußere Kapazität	Co	100	µF

zum Anschluss eines eigensicheren Video-Stromkreises mit den folgenden Höchstwerten:

Spannung	Ui	6	V
Stromstärke	Ii	188	mA
Leistung	Pi	194	mW
wirksame innere Kapazität	Ci	vernachlässigbar	
wirksame innere Induktivität	Li	vernachlässigbar	



1.2 Klemmenleiste K9 zum Anschluss des Gerätes Typ Challenger KMU-*, Typ Challenger KB-* oder Typ Challenger MTD-*

Klemmen 1 und 2: Versorgungsausgang, potentialmäßig verbunden mit Stromkreis an Klemme K3

Spannung	Uo	DC	12,5	V
Stromstärke	Io		543	mA
Leistung	Po		6,8	W

Max. äußere Kapazität und Induktivität hängen von der verwendeten Stromversorgung

(Anschluss an Klemmenleiste K3) ab

Klemmen 3 bis 7: Signalstromkreise

Spannung	Uo	DC	5,5	V
Stromstärke	Io		71	mA

2 Einheit Typ KMU-2D, KB-2D und MTD-2D

2.1 Ausgangs-(Versorgungs-)Stromkreis (Kl. K14-5 und K14-1)

Spannung	Uo	DC	5,43	V
Stromstärke	Io		356	mA
Leistung	Po		1,1	W
max. äußere Induktivität	Lo		280	µH
max. äußere Kapazität	Co		58	µF

2.2 RS232-Eingänge (Kl. K14-4, K14-6 und K14-7)

Spannung	Uo	DC	5,43	V
Stromstärke	Io		3,8	mA
Leistung	Po		5,7	mW
max. äußere Induktivität	Lo		2	mH
max. äußere Kapazität	Co		58	µF

2.3 RS232-Ausgänge (Kl. K14-8, K14-9 und K14-11)

Spannung	Uo	DC	10,8	V
Stromstärke	Io		15	mA
Leistung	Po		47	mW
max. äußere Induktivität	Lo		150	µH
max. äußere Kapazität	Co		2	µF

3 Einheit Typ KMU-2S, KB-2S und MTD-2S

3.1 Ausgangs-(Versorgungs-)Stromkreis (Kl. K14-5 und K14-1)

Spannung	Uo	DC	5,43	V
Stromstärke	Io		356	mA
Leistung	Po		1,1	W
max. äußere Induktivität	Lo		280	µH
max. äußere Kapazität	Co		31	µF

3.2 RS232-Eingänge (Kl. K14-4, K14-6 und K14-7)

Spannung	Uo	DC	5,43	V
Stromstärke	Io		3,8	mA
Leistung	Po		5,7	mW
max. äußere Induktivität	Lo		2	mH
max. äußere Kapazität	Co		58	µF

3.3 RS232-Ausgänge (Kl. K14-8, K14-9 und K14-11)

Spannung	Uo	DC	10,8	V
Stromstärke	Io		15	mA
Leistung	Po		47	mW
max. äußere Induktivität	Lo		150	µH
max. äußere Kapazität	Co		2	µF



- 4 Barrieren-Netzwerk Typ BCBN1i
4.1 Versorgungsstromkreis (Anschl. K17-1 und K17-2)
Spannung U_i
wirksame innere Induktivität L_i
wirksame innere Kapazität C_i

DC 12,5 V
vernachlässigbar
vernachlässigbar

- 4.2 Speisekreise (Anschl. K16)

Anschluss	U_o (V)	I_o (mA)	P_o (mW)	C_o (μ F)	L_o (μ H)
K16-13 -K16-16	6	470	1467	40	160
K16-11 -K16-16	6	362	1128	40	270
K16-9 -K16-16	6	183	571	40	1000
K16-7 -K16-16	6	97	303	40	3700
K16-5 -K16-16	6	49	153	40	14000
K16-3 -K16-16	6	24	74	40	60000
K16-1 -K16-16	6	12	38	40	240000

- 5 Einheit Typ KMU-2-BCBN*, KB-2-BCBN* und MTD-2-BCBN*
5.1 Ausgangs-(Versorgungs-)Stromkreis (Kl. K14-5 und K14-1)

Spannung U_o DC 5,43 V
Stromstärke I_o 356 mA
Leistung P_o 1,1 W
max. äußere Induktivität L_o 280 μ H
max. äußere Kapazität C_o 58 μ F

- 5.2 RS232-Eingänge (Kl. K14-4, K14-6 und K14-7)

Spannung U_o DC 6 V
Stromstärke I_o 3,8 mA
Leistung P_o 5,7 mW
max. äußere Induktivität L_o 2 mH
max. äußere Kapazität C_o 40 μ F

- 5.3 RS232-Ausgänge (Kl. K14-8, K14-9 und K14-11)

Spannung U_o DC 10,8 V
Stromstärke I_o 15 mA
Leistung P_o 47 mW
max. äußere Induktivität L_o 150 μ H
max. äußere Kapazität C_o 2 μ F

- 6 Für das Datenkabel zwischen der Sende-Baugruppe Typ TCV 2i und dem Terminal Typ Challenger 18i-FMO bzw. 15i-FMO bzw. 15i-2-FMO gilt:

Schleifenwiderstand	> 15 Ω /km
Isolationswiderstand	> 50 M Ω x km
Leitungskapazität	< 120 nF/km
Leitungsinduktivität	< 1400 μ H/km
Prüfspannung Ader/Ader	> 1000 V _{eff}
Prüfspannung Ader/Schirm	> 500 V _{eff}
Radiale Isolierdicke Ader	> 0,2 mm
Kupferdurchmesser einer Ader	> 0,1 mm
Einsatz-Temperaturbereich	-10 °C bis +60 °C
max. Länge	600 Meter



Prüfprotokoll

BVS PP 00.2084 EG, Stand 27.09.2002

Besondere Bedingungen für die sichere Anwendung

Für die Sende-Baugruppe Typ Challenger TCV 2i gilt:

- Die Sende-Baugruppe muss außerhalb des explosionsgefährdeten Bereiches so errichtet werden, dass für die Anschlussteile die Schutzart IP 20 gewährleistet wird.
- Die Anschlussteile für die äußeren eigensicheren Stromkreise der Sende-Baugruppe sind so anzuordnen, dass die blanken Teile mindestens 50 mm von Anschlussteilen oder blanken Leitern nichteigensicherer Stromkreise entfernt oder von diesen durch eine Trennwand nach 6.4.1 von EN 50020:1994 getrennt sind.
- Der Einbau der Sende-Baugruppe in einen Baugruppenträger hat so zu erfolgen, dass die Luftstrecken von blanken Teilen der eigensicheren Stromkreise zu den metallischen Gehäuseteilen mindestens 1,5 mm und zu blanken Teilen nichteigensicherer Stromkreise mindestens 6 mm betragen.

Deutsche Montan Technologie GmbH

Essen, den 27. September 2002

DMT-Zertifizierungsstelle

Fachbereichsleiter

(1) 2. Nachtrag zur EG-Baumusterprüfbescheinigung

- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung
in explosionsgefährdeten Bereichen - Richtlinie 94/9/EG
Ergänzung gemäß Anhang III Ziffer 6
- (3) Nr. der EG-Baumusterprüfbescheinigung: **DMT 00 ATEX E 089 X**
- (4) Gerät: **Terminal Typ Challenger **** mit Sende-Baugruppe Typ TCV 2i**
- (5) Hersteller: **GeCma Components GmbH**
- (6) Anschrift: **50169 Kerpen**
- (7) Die Bauart dieser Geräte sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu diesem Nachtrag festgelegt.
- (8) Die Zertifizierungsstelle der DEKRA EXAM GmbH, benannte Stelle Nr. 0158 gemäß Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlaments und des Rates vom 23. März 1994, bescheinigt, dass diese Geräte die grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie erfüllen. Die Ergebnisse der Prüfung sind in dem Prüfprotokoll BVS PP 00.2084 EG niedergelegt.
- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit
- EN 60079-0:2009 Allgemeine Anforderungen**
EN 60079-11:2007 Eigensicherheit 'I'
- (10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird in der Anlage zu dieser Bescheinigung auf besondere Bedingungen für die sichere Anwendung des Gerätes hingewiesen.
- (11) Dieser Nachtrag zur EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und die Baumusterprüfung der beschriebenen Geräte in Übereinstimmung mit der Richtlinie 94/9/EG. Für Herstellung und Inverkehrbringen der Geräte sind weitere Anforderungen der Richtlinie zu erfüllen, die nicht durch diese Bescheinigung abgedeckt sind.
- (12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:



II 2 G Ex ib IIC T4 Gb für das Terminal
II (2) G [Ex ib Gb] IIC für die Sende-Baugruppe

DEKRA EXAM GmbH
Bochum, den 28.03.2012

Zertifizierungsstelle

Fachbereich

- (13) Anlage zum
- (14) **2. Nachtrag zur EG-Baumusterprüfbescheinigung**
DMT 00 ATEX E 089 X
- (15) 15.1 Gegenstand und Typ

Terminal Typ Challenger **** mit Sende-Baugruppe Typ TCV 2i

15.2 Beschreibung

Das Terminal Typ Challenger **** kann auch nach den im Prüfprotokoll aufgeführten darstellenden Unterlagen gefertigt werden und man erhält auch die Ausführung:

Challenger 22i-FMO
Challenger Touch 22i-FMO

Außerdem wurden das Terminal und die Sende-Baugruppe nach den Normen EN 60079-0:2009 und EN 60079-11:2007 geprüft; daraus resultiert eine geänderte Kennzeichnung.

15.3 Kenngrößen

- 15.3.1 Terminal Typ Challenger 18i-FMO, Typ Challenger 15i-2-FMO und Typ Challenger 22i-FMO

- 15.3.1.1 Klemmleiste K1: Versorgungsstromkreise

Klemmen 3 - 4, 5 - 6, 7 - 8, 11 - 12, 13 - 14 und 15 - 16

Werte je Kreis

Spannung	U _i	DC	12,5	V
Stromstärke	I _i		543	mA
Leistung	P _i		6,8	W
wirksame innere Kapazität	C _i		vernachlässigbar	
wirksame innere Induktivität	L _i		vernachlässigbar	

- 15.3.1.2 Klemmleiste K2 und K3: Versorgungsstromkreise

Klemmen 1 - 2 je Klemmleiste

Spannung	U _i	DC	12,5	V
Stromstärke	I _i		543	mA
Leistung	P _i		6,8	W
wirksame innere Kapazität	C _i		vernachlässigbar	
wirksame innere Induktivität	L _i		vernachlässigbar	

- 15.3.1.3 Klemmleiste K4 zum Anschluss des Gerätes Typ Challenger KMU, Typ Challenger KB und Typ Challenger MTD über eine bis zu 5 m lange Leitung

Spannung	U _o	DC	5,5	V
Stromstärke	I _o		71	mA

- 15.3.1.4 Klemmleiste K5: zum Anschluss der Datenleitungen der Sende-Baugruppe

Typ Challenger TCV 2i, Werte je Leitungspaar

Spannung	U _i	DC	± 5,5	V
wirksame innere Kapazität	C _i		vernachlässigbar	
wirksame innere Induktivität	L _i		vernachlässigbar	

- 15.3.1.5 Video-Eingang (Klemmen X2)

Spannung	U _o		2,5	V
Stromstärke	I _o		88	mA
Leistung	P _o		176	mW
max. äußere Induktivität	L _o		4	mH
max. äußere Kapazität	C _o		100	µF

zum Anschluss eines eigensicheren Video-Stromkreises mit den folgenden Höchstwerten:

Spannung	Ui	6	V
Stromstärke	Ii	188	mA
Leistung	Pi	194	mW
wirksame innere Kapazität	Ci	vernachlässigbar	
wirksame innere Induktivität	Li	vernachlässigbar	

15.3.1.6 Klemmenleiste K9 zum Anschluss des Gerätes Typ Challenger KMU-*, Typ Challenger KB-* oder Typ Challenger MTD-*

15.3.1.6.1 Klemmen 1 und 2: Versorgungsausgang, verbunden mit Stromkreis an Klemme K3

Spannung	Uo	DC	12,5	V
Stromstärke	Io		543	mA
Leistung	Po		6,8	W
Max. äußere Kapazität und Induktivität hängen von der verwendeten Stromversorgung (Anschluss an Klemmenleiste K3) ab				

15.3.1.6.2 Klemmen 3 bis 7: Signalstromkreise

Spannung	Uo	DC	5,5	V
Stromstärke	Io		71	mA

15.3.1.7 Klemmenleiste K40 (nur für Typ Challenger Touch 22i-FMO)

15.3.1.7.1 Klemmen 1 bis 4: Versorgungsstromkreis

Spannung	Ui	DC	12,5	V
Stromstärke	Ii		543	mA
Leistung	Pi		6,8	W
wirksame innere Kapazität	Ci		vernachlässigbar	
wirksame innere Induktivität	Li		vernachlässigbar	
Dynamischer Ausgangsstrom	Io max		95	mA

15.3.1.7.2 Terminal 5 bis 7: Datenstromkreis

Spannung	Ui	DC	12,5	V
Stromstärke	Ii		543	mA
Leistung	Pi		6,8	W
wirksame innere Kapazität	Ci		vernachlässigbar	
wirksame innere Induktivität	Li		vernachlässigbar	

15.3.2 Einheit Typ KMU-2D, KB-2D und MTD-2D

15.3.2.1 Ausgangs-(Versorgungs-)Stromkreis (Kl. K14-5 und K14-1)

Spannung	Uo	DC	5,43	V
Stromstärke	Io		356	mA
Leistung	Po		1,1	W
max. äußere Induktivität	Lo		280	µH
max. äußere Kapazität	Co		58	µF

15.3.2.2 RS232-Eingänge (Kl. K14-4, K14-6 und K14-7)

Spannung	Uo	DC	5,43	V
Stromstärke	Io		3,8	mA
Leistung	Po		5,7	mW
max. äußere Induktivität	Lo		2	mH
max. äußere Kapazität	Co		58	µF

zum Anschluss eines eigensicheren Stromkreises mit folgendem Höchstwert

Spannung	Ui	DC	12	V
----------	----	----	----	---

15.3.2.3 RS232-Ausgänge (Kl. K14-8, K14-9 und K14-11)

Spannung	U _o	DC	10,8	V
Stromstärke	I _o		15	mA
Leistung	P _o		47	mW
max. äußere Induktivität	L _o		150	µH
max. äußere Kapazität	C _o		2	µF

15.3.3 Einheit Typ KMU-2S, KB-2S und MTD-2S

15.3.3.1 Ausgangs-(Versorgungs-)Stromkreis (Kl. K14-5 und K14-1)

Spannung	U _o	DC	5,43	V
Stromstärke	I _o		356	mA
Leistung	P _o		1,1	W
max. äußere Induktivität	L _o		280	µH
max. äußere Kapazität	C _o		31	µF

15.3.3.2 RS232-Eingänge (Kl. K14-4, K14-6 und K14-7)

Spannung	U _o	DC	5,43	V
Stromstärke	I _o		3,8	mA
Leistung	P _o		5,7	mW
max. äußere Induktivität	L _o		2	mH
max. äußere Kapazität	C _o		58	µF

zum Anschluss eines eigensicheren Stromkreises mit folgendem Höchstwert

Spannung	U _i	DC	12	V
----------	----------------	----	----	---

15.3.3.3 RS232-Ausgänge (Kl. K14-8, K14-9 und K14-11)

Spannung	U _o	DC	10,8	V
Stromstärke	I _o		15	mA
Leistung	P _o		47	mW
max. äußere Induktivität	L _o		150	µH
max. äußere Kapazität	C _o		2	µF

15.3.4 Barrieren-Netzwerk Typ BCBN1i

15.3.4.1 Versorgungsstromkreis (Anschl. K17-1 und K17-2)

Spannung	U _i	DC	12,5	V
wirksame innere Induktivität	L _i		vernachlässigbar	
wirksame innere Kapazität	C _i		vernachlässigbar	

15.3.4.2 Speisekreise (Anschl. K16)

Anschluss	U _o (V)	I _o (mA)	P _o (mW)	C _o (µF)	L _o (µH)
K16-13 -K16-16	6	470	1467	40	160
K16-11 -K16-16	6	362	1128	40	270
K16-9 -K16-16	6	183	571	40	1000
K16-7 -K16-16	6	97	303	40	3700
K16-5 -K16-16	6	49	153	40	14000
K16-3 -K16-16	6	24	74	40	60000
K16-1 -K16-16	6	12	38	40	240000

15.3.5 Einheit Typ KMU-2-BCBN*, KB-2-BCBN* und MTD-2-BCBN*

15.3.5.1 Ausgangs-(Versorgungs-)Stromkreis (Kl. K14-5 und K14-1)

Spannung	U _o	DC	5,43	V
Stromstärke	I _o		356	mA
Leistung	P _o		1,1	W
max. äußere Induktivität	L _o		280	µH
max. äußere Kapazität	C _o		58	µF

15.3.5.2 RS232-Eingänge (Kl. K14-4, K14-6 und K14-7)

Spannung	U ₀	DC	6	V
Stromstärke	I ₀		3,8	mA
Leistung	P ₀		5,7	mW
max. äußere Induktivität	L ₀		2	mH
max. äußere Kapazität	C ₀		40	µF

zum Anschluss eines eigensicheren Stromkreises mit folgendem Höchstwert

Spannung	U _i	DC	12	V
----------	----------------	----	----	---

15.3.5.3 RS232-Ausgänge (Kl. K14-8, K14-9 und K14-11)

Spannung	U ₀	DC	10,8	V
Stromstärke	I ₀		15	mA
Leistung	P ₀		47	mW
max. äußere Induktivität	L ₀		150	µH
max. äußere Kapazität	C ₀		2	µF

15.3.6 Für das Datenkabel zwischen der Sende-Baugruppe Typ TCV 2i und dem Terminal Typ Challenger 18i-FMO bzw. 15i-2-FMO bzw. 22i-FMO gilt:

Schleifenwiderstand	> 15 Ω/km
Isolationswiderstand	> 50 MΩ x km
Leitungskapazität	< 120 nF/km
Leitungsinduktivität	< 1400 µH/km
Prüfspannung Ader/Ader	> 1000 V _{eff}
Prüfspannung Ader/Schirm	> 500 V _{eff}
Radiale Isolierdicke Ader	> 0,2 mm
Kupferdurchmesser einer Ader	> 0,1 mm
Einsatz-Temperaturbereich	-10 °C bis +60 °C
max. Länge	600 Meter

15.3.7 Umgebungstemperaturbereich Ta -10 °C bis +60 °C

(16) Prüfprotokoll

BVS PP 00.2084 EG, Stand 28.03.2012

(17) Besondere Bedingungen für die sichere Anwendung

Für die Sende-Baugruppe Typ Challenger TCV 2i gilt:

- 17.1 Die Sende-Baugruppe muss außerhalb des explosionsgefährdeten Bereiches so errichtet werden, dass für die Anschlussteile die Schutzart IP 20 gewährleistet wird.
- 17.2 Die Anschlussteile für die äußeren eigensicheren Stromkreise der Sende-Baugruppe sind so anzuordnen, dass die blanken Teile mindestens 50 mm von Anschlussteilen oder blanken Leitern nichteigensicherer Stromkreise entfernt oder von diesen durch eine Trennwand nach 6.2.1 von EN 60079-11:2007 getrennt sind.
- 17.3 Der Einbau der Sende-Baugruppe in einen Baugruppenträger hat so zu erfolgen, dass die Luftstrecken von blanken Teilen der eigensicheren Stromkreise zu den metallischen Gehäuseteilen mindestens 1,5 mm und zu blanken Teilen nichteigensicherer Stromkreise mindestens 6 mm betragen.



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BVS 05.0002 Issue No.: 0

Status: Current

Date of Issue: 2005-02-04 Page 1 of 3

Applicant: GeCma Components GmbH
Heisenbergstr. 26 - 40
50169 Kerpen
Germany

Electrical Apparatus: Mouse type Challenger M
Optional accessory:

Type of Protection: Intrinsic Safety

Marking: Ex ib IIC T4

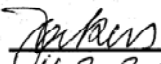
Approved for issue on behalf of the IECEx
Certification Body:

Dr. R. Jockers

Position:

Head of Certification Body

Signature:
(for printed version)


04.2.2005

Date:

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Certificate issued by:

**EXAM BBG Prüf- und Zertifizier
GmbH**

Fachstelle für Sicherheit elektrischer Betriebsmittel – BVS
Dinnendahlstrasse 9
44809 Bochum
Germany



IECEX Certificate of Conformity

Certificate No.: IECEx BVS 05.0002

Date of Issue: 2005-02-04

Issue No.: 0

Page 2 of 3

Manufacturer: GeCma Components GmbH
Heisenbergstr. 26 - 40
50169 Kerpen
Germany

Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacture's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

- | | |
|------------------------------------|--|
| IEC 60079-0 : 2004
Edition: 4.0 | Electrical apparatus for explosive gas atmospheres - Part 0: General requirements |
| IEC 60079-11 : 1999
Edition: 4 | Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'I' |

This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

IECEX ATR:
DE/BVS/05/2009

File Reference:
A 20040600



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 05.0002

Date of Issue: 2005-02-04

Issue No.: 0

Page 3 of 3

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Description

The Challenger M is a pointing devices e.g. for control pointers at a screen. The unit is designed for use in hazardous areas.

Parameters

Voltage	Ui	DC	5.5	V
Current	Ii		71	mA
effective internal capacitance	Ci		13	µF
effective internal inductance	Li		negligible	
Ambient temperature range	Ta		-10 up to +60 °C	

CONDITIONS OF CERTIFICATION: NO

Annexe:



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BVS 05.0004 Issue No.: 1
Status: Current
Date of Issue: 2005-04-19 Page 1 of 4
Applicant: GeCma Components GmbH
Heisenbergstr. 26 - 40
50169 Kerpen
Germany

Electrical Apparatus: Trackball type Challenger TB
Optional accessory:

Type of Protection: Intrinsic safety

Marking: Ex Ib IIC T4

Approved for issue on behalf of the IECEx
Certification Body:

Dr. R. Jockers

Position:

Head of Certification Body

Signature:
(for printed version)

19.4.05

Date:

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Certificate issued by:

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GmbH**

Fachstelle für Sicherheit elektrischer Betriebsmittel – BVS
Dinnendahlstrasse 9
44809 Bochum
Germany



IECEX Certificate of Conformity

Certificate No.: IECEx BVS 05.0004
Date of Issue: 2005-04-19 Issue No.: 1
Page 2 of 4

Manufacturer: GeCma Components GmbH
Heisenbergstr. 26 - 40
50169 Kerpen
Germany

Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacture's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2004 Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
Edition: 4.0
IEC 60079-11 : 1999 Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'I'
Edition: 4

This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

IECEx ATR:
DE/BVS/05/2011
DE/BVS/05/2011/N1

File Reference:
A 20040599
A 20050125



IECEX Certificate of Conformity

Certificate No.: IECEx BVS 05.0004

Date of Issue: 2005-04-19

Issue No.: 1

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Description

The Challenger TB is a pointing devices e.g. for control pointers at a screen. The unit is designed for use in hazardous areas.

The electrical parts are integrated into a metal enclosure, partial made of light metal.

The connection of the intrinsically safe circuits is done by a permanently connected cable with a connector at the end.

Parameters

Voltage	Ui	DC	5.5	V
Current	Ii		71	mA
effective internal capacitance	CI		10	µF
effective internal inductance	Li		negligible	
Ambient temperature range	Ta		-10 up to +60 °C	

CONDITIONS OF CERTIFICATION: NO



IECEX Certificate of Conformity

Certificate No.: IECEx BVS 05.0004

Date of Issue: 2005-04-19

Issue No.: 1

Page 4 of 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Description

The trackball type Challenger can be modified slightly and can be used with other electrical parameters.

Modified parameters

Voltage	Ui	DC	5.5	V
Current	Ii		85	mA
Power	Pi		196	mW
effective internal capacitance	CI		10	µF
effective internal inductance	Li		negligible	
Ambient temperature range	Ta		-20 up to +60 °C	

Annexe:



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BVS 05.0003 Issue No.: 0

Status: Current

Date of Issue: 2005-02-04 Page 1 of 4

Applicant: GeCma Components GmbH
Heisenbergstr. 26 40
50169 Kerpen
Germany

Electrical Apparatus: Keyboard, Keyboard-Decoder, Barrier Network
Optional accessory:

Type of Protection: Intrinsic Safety

Marking: Ex ib IIC T4

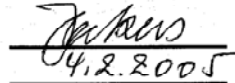
Approved for issue on behalf of the IECEx
Certification Body:

Dr. R. Jockers

Position:

Head of Certification Body

Signature:
(for printed version)


4.2.2005

Date:

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Certificate issued by:

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GmbH**

Fachstelle für Sicherheit elektrischer Betriebsmittel – BVS
Dinnendahlstrasse 9
44809 Bochum
Germany



IECEX Certificate of Conformity

Certificate No.: IECEx BVS 05.0003

Date of Issue: 2005-02-04

Issue No.: 0

Page 2 of 4

Manufacturer: GeCma Components GmbH
Heisenbergstr. 26 - 40
50169 Kerpen
Germany

Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacture's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2004 Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
Edition: 4.0
IEC 60079-11 : 1999 Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'i'
Edition: 4

This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

IECEx ATR:
DE/BVS/05/2010

File Reference:
A 20040598



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 05.0003

Date of Issue: 2005-02-04

Issue No.: 0

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Description

The Challenger keyboards, keyboard decoder and barrier networks are intrinsically safe apparatus e.g. for entering and decoding data and limiting power for the supply of other devices. The units are designed for use in hazardous areas. The electrical parts are integrated into metal enclosures partial or complete made of light metal. The connection of the external intrinsically safe circuits is done by connectors at the rear side of the enclosure.

CONDITIONS OF CERTIFICATION: NO



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 05.0003

Date of Issue: 2005-02-04

Issue No.: 0

Page 4 of 4

Additional information:

Equipment

The following apparatus are possible:

Keyboard type Challenger KB or
Keyboard type Challenger KB-2* or
Keyboard type Challenger KMU or
Keyboard type Challenger KMU-2* or
Keyboard type Challenger KMU-2-BCBN* or
Keyboard type Challenger KB-2-BCBN*
Keyboard decoder type Challenger MTD or
Keyboard decoder type Challenger MTD-2* or
Keyboard decoder type Challenger MTD-2-BCBN*
Barrier network type Challenger BCBN11

Instead of the * the letters D or S will be inserted which characterize different built-in electronics.

The variations Challenger KB, Challenger KMU, Challenger KB-2*, Challenger KMU-2*, Challenger KB-2-BCBN* and Challenger KMU-2-BCBN* have a keyboard front made of plastic.

Electrical parameters

see Annex Parameters

Annexe: Annex Parameters.pdf



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Certificate No.: IECEx BVS 05.0003
Annex
Page 1 of 3

Parameters

1 Type Challenger KB, Challenger KMU and Challenger MTD

1.1	Connector K11 (Terminals 1 to 8): to connect a ASD (application supporting device) for data input/output e.g. to connect to a monitor or transmission unit			
	Voltage	Ui	DC	5,5 V
	Current	Ii		71 mA
	effective internal capacitance	Ci		15 µF
	effective internal inductance	Li		negligible
1.2	Connector K11 (Terminals 9 to 10):			
	Voltage	Ui	DC	5,5 V
	Current	Ii		71 mA
	effective internal capacitance	Ci		negligible
	effective internal inductance	Li		negligible
1.3	Connector K11 (Terminals 11 to 16): to connect a ASD (application supporting device) for data input/output e.g. to connect a pointing device like a mouse, circuits connected with supply at connector K11 terminals 9 and 10			
	Voltage	Uo	DC	5,5 V
	Current	Io		71 mA
	max. external capacitance	Co		40 µF
	max. external inductance	Lo		1 mH
1.4	Connector K11 (Terminals 17, 18) and connector K12: for the connection of floating contacts			
	Voltage	Uo	DC	5,5 V
	Current	Io		1 mA
	max. external capacitance	Co		40 µF
	max. external inductance	Lo		1 mH
1.5	Ambient temperature range	Ta		-10 °C to +60 °C

2 Type Challenger KMU-2*, Challenger KB-2* and Challenger MTD-2*

2.1	Connector K11 (Terminals 1 to 8): to connect a ASD (application supporting device) for data input/output e.g. to connect to a monitor or transmission unit			
	Voltage	Ui	DC	5,5 V
	Current	Ii		71 mA
	effective internal capacitance	Ci		18 µF
	effective internal inductance	Li		negligible
2.2	Connector K11 (Terminals 9 up to 10):			
	Voltage	Ui	DC	5,5 V
	Current	Ii		71 mA
	effective internal capacitance	Ci		200 nF
	effective internal inductance	Li		negligible



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Certificate No.: IECEx BVS 05.0003
Annex
Page 2 of 3

2.3	Connector K11 (Terminals 11 to 14): to connect a ASD (application supporting device) for data input/output e.g. to connect a pointing device like a mouse, circuits connected with supply at connector K11 terminals 9 and 10			
	Voltage	Uo	DC	5,5 V
	Current	Io		71 mA
	max. external capacitance	Co		40 µF
	max. external inductance	Lo		1 mH
2.4	Connector K11 (Terminals 17 and 18) and connector K12: for the connection of floating contacts			
	Voltage	Uo	DC	5,5 V
	Current	Io		71 mA
	max. external capacitance	Co		40 µF
	max. external inductance	Lo		1 mH
2.5	Connector K14 (Terminals 3 and 1): Power supply input			
	Voltage	Ui	DC	12,5 V
	Current	Ii		543 mA
	effective internal capacitance	Ci		22 nF
	effective internal inductance	Li		
2.6	Connector K14 (Terminals 5 and 2): Output-(supply-)circuit			
	Voltage	Uo	DC	5,43 V
	Current	Io		356 mA
	Power	Po		1,1 W
	max. external inductance	Lo		280 µH
	max. external capacitance			
	for types KMU-2D, KB-2D and MTD-2D	Co		58 µF
	for types KMU-2S, KB-2S and MTD-2S	Co		31 µF
2.7	Connector K14 (Terminals 4, 6 and 7): RS232-input			
	Voltage	Uo	DC	5,43 V
	Current	Io		3,8 mA
	Power	Po		5,7 mW
	max. external inductance	Lo		2 mH
	max. external capacitance	Co		58 µF
2.8	Connector K14 (Terminals 8, 9 and 11): RS232-output			
	Voltage	Uo	DC	10,8 V
	Current	Io		15 mA
	Power	Po		47 mW
	max. external inductance	Lo		150 µH
	max. external capacitance	Co		2 µF
2.9	Ambient temperature range	Ta		-10 °C to +60 °C
3	Type Challenger BCBN1i			
3.1	Connector K17 (Terminals 1 and 2): Power supply circuit			
	Voltage	Ui	DC	12,5 V
	Effective internal inductivity	Li		negligible
	Effective internal capacity	Ci		negligible

Certificate No.: IECEx BVS 05.0003

Annex

Page 3 of 3

3.2 Connector K16: Supply output circuit

Terminal	Uo (V)	Io (mA)	Po (mW)	Co (μF)	Lo (μH)
K16-13 -K16-16	6	470	1467	40	180
K16-11 -K16-16	6	362	1128	40	270
K16-9 -K16-16	6	183	571	40	1000
K16-7 -K16-16	6	97	303	40	3700
K16-5 -K16-16	6	49	153	40	14000
K16-3 -K16-16	6	24	74	40	80000
K16-1 -K16-16	6	12	38	40	240000

3.3	Ambient temperature range	Ta	-10 °C to +60 °C
-----	---------------------------	----	------------------

4 Type Challenger KMU-2-BCBN*, Challenger KB-2-BCBN* and Challenger MTD-2-BCBN*
Parameters as types KMU-2*, KB-2*, MTD-2* (see 2) plus parameters BCBN1i (see 3)

Ambient temperature range	Ta	-10 °C to +60 °C
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Certificate No.: IECEx BVS 05.0005 Issue No.: 0
Status: Current
Date of Issue: 2005-04-19 Page 1 of 3
Applicant: GeCma Components GmbH
Heisenbergstr. 26 - 40
50169 Kerpen
Germany

Electrical Apparatus: Transmission unit type Challenger TCV2i
Optional accessory:

Type of Protection: Intrinsic Safety

Marking: [Ex ib] IIC

Approved for issue on behalf of the IECEx
Certification Body:

Dr. R. Jockers

Position:

Head of Certification Body

Signature:
(for printed version)

19.4.05

Date:

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**EXAM BBG Prüf- und Zertifizier
GmbH**
Fachstelle für Sicherheit elektrischer Betriebsmittel - BVS
Dinnendahlstrasse 9
44809 Bochum
Germany



IECEX Certificate of Conformity

Certificate No.: IECEx BVS 05.0005
Date of Issue: 2005-04-19 Issue No.: 0
Page 2 of 3

Manufacturer: GeCma Components GmbH
Heisenbergstr. 26 - 40
50169 Kerpen
Germany

Manufacturing location(s):

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STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2004 Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
Edition: 4.0
IEC 60079-11 : 1999 Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'I'
Edition: 4

This Certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

IECEx ATR:
DE/BVS/05/2044

File Reference:
A 20040601



IECEX Certificate of Conformity

Certificate No.: IECEx BVS 05.0005

Date of Issue: 2005-04-19

Issue No.: 0

Page 3 of 3

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Description

The transmission unit Challenger TCV2i is a unit for transmission of video and data signals e.g. video, mouse and keyboard from a non-IS circuit into an IS circuit.
The unit is designed for use outside the hazardous area with intrinsically safe circuits leading into the hazardous area.

Parameters

- 1 Non intrinsically safe circuits at the connectors ± 12 V.
PS2-Terminals keyboard and mouse, RS485 and VGA input/output
max. voltage

Um	AC	250	V
----	----	-----	---
- 2 Connector ST10: IS circuits for the connection of a receiving unit, e.g. a monitor or keyboard
For each circuit (each cable pair 1 up to 4)

Voltage	Uo	5,5	V
Current	Io	105	mA
max. external capacitance	Ci	10	μ F
max. external inductance	Li	2	mH
- 3 Ambient temperature range

Ta	-10 up to +60 °C
----	------------------

CONDITIONS OF CERTIFICATION: NO

Annexe:



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BVS 05.0006 Issue No.: 0
Status: Current
Date of Issue: 2005-05-13 Page 1 of 4
Applicant: GeCma Components GmbH
Heisenbergstr. 26 - 40
50169 Kerpen
Germany

Electrical Apparatus: Display type Challenger 15i-FMO, Challenger 15i-2-FMO, Challenger 18i-FMO
Optional accessory:

Type of Protection: Intrinsic safety

Marking: Ex ib IIC T4

Approved for issue on behalf of the IECEx
Certification Body:

Dr. R. Jockers

Position:

Head of Certification Body

Signature:
(for printed version)

13.5.2005

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

**EXAM BBG Prüf- und Zertifizier
GmbH**

Fachstelle für Sicherheit elektrischer Betriebsmittel – BVS
Dinnendahlstrasse 9
44009 Bochum
Germany



IECEX Certificate of Conformity

Certificate No.: IECEx BVS 05.0006
Date of Issue: 2005-05-13 Issue No.: 0
Page 2 of 4

Manufacturer: GeCma Components GmbH
Heisenbergstr. 26 - 40
50169 Kerpen
Germany

Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacture's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2004 Edition: 4.0	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-11 : 1999 Edition: 4	Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'I'

This Certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

IECEX ATR:
DE/BVS/05/2052

File Reference:
A 20040299



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 05.0006

Date of Issue: 2005-05-13

Issue No.: 0

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Description

The display type Challenger 17i-FMO is used in conjunction with a transmitting module for the visualisation of data and processes and for data entry via a keyboard or mouse.

The unit is designed for use in hazardous areas.

The electrical parts are integrated into metal enclosure with a glass plane at the front side. The intrinsically safe circuits are connected using terminals located behind a cover at the rear side of the enclosure.

Marking

The name and address of the manufacturer

Type Challenger 18i-FMO or 16i-FMO or 16i-2-FMO

Ex ib IIC T4

Serial number

Certificate number

Tamb -10 °C up to +60 °C

CONDITIONS OF CERTIFICATION: NO



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 05.0006

Date of Issue: 2005-05-13

Issue No.: 0

Page 4 of 4

Additional information:

Electrical parameters see Annex

Annexe: Annex.pdf



IECEX Certificate of Conformity



Certificate No.: IECEx BVS 05.0006
Annex
Page 1 of 2

Parameters

1 Type Challenger 18i-FMO and type Challenger 15i-2-FMO

1.1 Terminal strips K1: power supply circuits

Terminals 3 - 4, 5 - 6, 7 - 8, 11 - 12, 13 - 14 and 15 - 16

Values per circuit

Voltage	U _i	DC	12,5	V
Current	I _i		543	mA
Power	P _i		6,8	W
Effective internal capacitance	C _i		negligible	
Effective internal inductance	L _i		negligible	

1.2 Terminal strips K2 and K3: power supply circuits

Value each Terminal 1 - 2

Voltage	U _i	DC	12,5	V
Current	I _i		543	mA
Power	P _i		6,8	W
Effective internal capacitance	C _i		negligible	
Effective internal inductance	L _i		negligible	

1.3 Terminal strips K4 to connect an ASD (application supporting device) for data input/output e.g. to connect a keyboard.

Voltage	U _o	DC	5,5	V
Current	I _o		71	mA
max. external capacitance	C _o		40	µF
max. external inductance	L _o		1	mH

1.5 Terminal strips K5: to connect a data cable to a transmission unit e.g. Challenger TCV 2i

Values each cable pair

Voltage	U _i		5,5	V
Effective internal capacitance	C _i		negligible	
Effective internal inductance	L _i		negligible	

1.6 Video-Input (Terminal X2)

Voltage	U _o		2,5	V
Current	I _o		88	mA
Power	P _o		176	mW
max. external inductance	L _o		4	mH
max. external capacitance	C _o		100	µF

for the connection of an intrinsically safe video circuit with following max values:

Voltage	U _i		6	V
Current	I _i		188	mA
Power	P _i		194	mW
Effective internal capacitance	C _i		negligible	
Effective internal inductance	L _i		negligible	



IECEX Certificate of Conformity



Certificate No.: IECEx BVS 05.0006
Annex
Page 2 of 2

1.7 Terminal strips K9

Terminal 1 and 2: power supply output, identical with circuit at terminal K3

Voltage	U _o	DC	12,5	V
Current	I _o		543	mA
Power	P _o		6,8	W

Max. external capacitance and inductance depend on used power supply at terminal K3

1.8 Terminal 3 to 7: to connect an ASD (application supporting device) for data input/output e.g. to connect a keyboard

Voltage	U _o	DC	5,5	V
Current	I _o		71	mA
max. external capacitance	C _o		40	µF
max. external inductance	L _o		1	mH

1.9 Ambient temperature range Ta -10 °C up to +60 °C

2 Type Challenger 15i-FMO

2.1 Terminal strips K1: power supply circuits

Terminals 3 - 4, 5 - 6, 7 - 8, 11 - 12, 13 - 14 and 15 - 16

Values each circuit

Voltage	U _i	DC	13	V
Current	I _i		468	mA
Power	P _i		5,85	W
Effective internal capacitance	C _i		negligible	
Effective internal inductance	L _i		negligible	

2.2 Terminal strips K2 and K3: power supply circuits

Values each Terminal 1 - 2

Voltage	U _i	DC	13	V
Current	I _i		468	mA
Power	P _i		6,8	W
Effective internal capacitance	C _i		negligible	
Effective internal inductance	L _i		negligible	

2.3 Terminal strips K4 to connect an ASD (application supporting device) for data input/output e.g. to connect a keyboard.

Voltage	U _o	DC	5,5	V
Current	I _o		71	mA
max. external capacitance	C _o		40	µF
max. external inductance	L _o		1	mH

2.4 Terminal strips K5: to connect a data cable to a transmission unit e.g. Challenger TCV 2i

Values each cable pair

Voltage	U _i		5,5	V
Effective internal capacitance	C _i		negligible	
Effective internal inductance	L _i		negligible	

2.5 Ambient temperature range Ta -10 °C up to +60 °C



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx BVS 12.0011	issue No.:0	Certificate history:
Status:	Current		
Date of Issue:	2012-04-04	Page 1 of 3	
Applicant:	GeCma Components GmbH Heisenbergstrasse 26-40 50169 Kerpen Germany		
Electrical Apparatus:	Terminal, type Challenger		
Optional accessory:			
Type of Protection:	Intrinsic safety		
Marking:	Ex ib IIC T4 Gb		
Approved for issue on behalf of the IECEx Certification Body:	Dr. F. Eickhoff		
Position:	Deputy Head of Certification Body		
Signature: (for printed version)			
Date:	<u>2012-04-04</u>		

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

DEKRA EXAM GmbH
Dinnendahlstrasse 9
44809 Bochum
Germany

 **DEKRA**
DEKRA EXAM GmbH



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 12.0011

Date of Issue: 2012-04-04

Issue No.: 0

Page 2 of 3

Manufacturer: **GeCma Components GmbH**
Heisenbergstrasse 26-40
50169 Kerpen
Germany

Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Explosive atmospheres - Part 0: General requirements

Edition: 6.0

IEC 60079-11 : 2011-06 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

Edition: 6.0

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

DE/BVS/ExTR12.0022/00

Quality Assessment Report:

DE/TUR/QAR09.0005/00



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 12.0011

Date of Issue: 2012-04-04

Issue No.: 0

Page 3 of 3

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

General product information
see Annex

Parameters
see Annex

CONDITIONS OF CERTIFICATION: NO



IECEx Certificate of Conformity



Certificate No.: IECEx BVS 12.0011
Annex
Page 1 of 2

General product information:

The terminal Challenger **i-FMO is a modular apparatus to be integrated into a cut out. It is a display e. g. for process visualization and is designed for use in the hazardous areas. It consists of a metallic enclosure with a glass window at the front side. Inside the enclosure the boards RCV2i, APL2i, a graphic card, a display and a backlight inverter are fixed. In the variant Challenger Touch **I a touch screen electronic (CRM1i) is also fixed inside the enclosure and a touch screen (thickness of foil $\leq 0,2$ mm) is mounted before the glass front. The electrical connection is done by terminals located behind a cover on the rear side of the housing. The following variants are possible:

Challenger 15i-2-FMO, Challenger Touch 15i-2-FMO
Challenger 18i-FMO, Challenger Touch 18i-FMO
Challenger 22i-FMO, Challenger Touch 22i-FMO

The electrical components inside the enclosure are similar, each display size has its own corresponding backlight inverter type, display and graphics card type and the outer dimensions of the enclosure are different.

Parameters:

- | | | | | | |
|---|--|----------------|----|-------|------------|
| 1 | Terminal strips K1: power supply circuits
Terminals 3 - 4, 5 - 6, 7 - 8, 11 - 12, 13 - 14 and 15 - 16
Values per circuit | | | | |
| | Voltage | U _i | DC | 12.5 | V |
| | Current | I _i | | 543 | mA |
| | Power | P _i | | 6.8 | W |
| | Effective internal capacitance | C _i | | | negligible |
| | Effective internal inductance | L _i | | | negligible |
| 2 | Terminal strips K2 and K3: power supply circuits
Terminal 1 - 2 for each terminal strip | | | | |
| | Voltage | U _i | DC | 12.5 | V |
| | Current | I _i | | 543 | mA |
| | Power | P _i | | 6.8 | W |
| | Effective internal capacitance | C _i | | | negligible |
| | Effective internal inductance | L _i | | | negligible |
| 3 | Terminal strips K4 to connect an ASD (application supporting device) for data input/output e.g. to connect a keyboard. | | | | |
| | Voltage | U _o | DC | 5.5 | V |
| | Current | I _o | | 71 | mA |
| | max. external capacitance | C _o | | 40 | μF |
| | max. external inductance | L _o | | 1 | mH |
| 4 | Terminal strips K5: to connect a data cable to a transmission unit e.g. Challenger TCV 2i
Values each cable pair | | | | |
| | Voltage | U _i | | ± 5.5 | V |
| | Effective internal capacitance | C _i | | | negligible |
| | Effective internal inductance | L _i | | | negligible |



IECEX Certificate of Conformity



Certificate No.: IECEx BVS 12.0011
Annex
Page 2 of 2

5	Video-Input (Terminal X2)				
	Voltage	Uo	2.5	V	
	Current	Io	88	mA	
	Power	Po	176	mW	
	max. external inductance	Lo	4	mH	
	max. external capacitance	Co	100	μF	

for the connection of an intrinsically safe video circuit with following max values:

	Voltage	Ui	6	V	
	Current	Ii	188	mA	
	Power	Pi	194	mW	
	Effective internal capacitance	Ci	negligible		
	Effective internal inductance	Li	negligible		

6	Terminal strip K9				
6.1	Terminal 1 and 2: power supply output				
	Voltage	Uo	DC	12.5	V
	Current	Io		543	mA
	Power	Po		6.8	W

Max. external capacitance Co and max. external inductance Lo depend on the power supply connected at terminal K3

6.2	Terminal 3 to 7: to connect an ASD (application supporting device) for data input/output e.g. to connect a keyboard				
	Voltage	Uo	DC	5.5	V
	Current	Io		71	mA
	max. external capacitance	Co		40	μF
	max. external inductance	Lo		1	mH

7	Terminal strip K40 (only for types Challenger Touch **i-FMO)				
7.1	Terminal 1 to 4: power supply				
	Voltage	Ui	DC	12.5	V
	Current	Ii		543	mA
	Power	Pi		6.8	W
	Effective internal capacitance	Ci		negligible	
	Effective internal inductance	Li		negligible	
	Dynamic output current	Io		95	mA

7.2	Terminal 5 to 7: data circuits				
	Voltage	Ui	DC	12.5	V
	Current	Ii		543	mA
	Power	Pi		6.8	W
	Effective internal capacitance	Ci		negligible	
	Effective internal inductance	Li		negligible	

8	Ambient temperature range	Ta		-10 °C up to +60 °C	
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Certificate of Compliance

Certificate Number 20050512-E232869
Report Reference E232869-2003 March 06
Issue Date 2005 May 12

Page 1 of 2



Issued to: **GECMA COMPONENTS GMBH**
Heisenberg str 26-40
50169 Kerpen Germany

*This is to certify that
representative samples of*

Programmable Controllers

Challenger Computer Terminal including all components shown on page 2 of this Certificate.

*Have been investigated by Underwriters Laboratories Inc.® in
accordance with the Standard(s) indicated on this Certificate.*

Standard(s) for Safety:

UL 60079-0 Electrical Apparatus for Explosive Gas Atmospheres - Part 0: General Requirements
UL 60079-5 Electrical Apparatus for Explosive Gas Atmospheres - Part 5: Powder Filling "q"
UL 60079-7 Electrical Apparatus for Explosive Gas Atmospheres - Part 7: Increased Safety "e"
UL 60079-11 Electrical Apparatus for Explosive Gas Atmospheres - Part 11: Intrinsic Safety "i"
UL 60950 Safety of Information Technology Equipment

Additional Information:

All components that make up the Challenger terminal have an ambient temperature rating of -10 to +60°C. The PSU14i power supply has an input rating of 24 V dc, 3 A. The PSU2 power supply has an input rating of 100 to 240 V ac, 50/60 Hz. The X2 connector on the 15i/18i UVI displays and the BU1 connector on the KB-2D/KBU-2D/MTD-2D keyboards and decoder are assigned entity parameters as stated on the control drawing 30100162.

Only those products bearing the UL Listing Mark should be considered as being covered by UL's Listing and Follow-Up Service.

The UL Listing Mark generally includes the following elements: the symbol UL in a circle:  with the word "LISTED"; a control number (may be alphanumeric) assigned by UL; and the product category name (product identifier) as indicated in the appropriate UL Directory.

Look for the UL Listing Mark on the product

Issued by: *Frederic J. Cleary*
Frederic J. Cleary / Lead Engineering Associate
Underwriters Laboratories Inc.

Reviewed by: *Paul Kelly*
Paul Kelly / Operations Manager
Underwriters Laboratories Inc.

Certificate of Compliance

Certificate Number 20050512-E232869
Report Reference E232869-2003 March 06
Issue Date 2005 May 12

Page 2 of 2



Associated apparatus for use in nonhazardous locations, provides intrinsically safe circuits for use in Class I, Zone 1, Group IIC Hazardous Locations when connected in accordance with control drawing 30100162.

Challenger TCV2i terminal transmission unit, [AEx ib] IIC
Challenger TCS1i RS232 transmission interface, [AEx ib] IIC

Associated apparatus for use in Class I, Zone 1 Group IIC Hazardous Locations, provides intrinsically safe circuits when connected in accordance with control drawing 30100162.

Challenger PSU14i/6/543 terminal power supply unit, AEx qe [ib] IIC T4
Challenger PSU14i/8/543 terminal power supply unit, AEx qe [ib] IIC T4

Class I, Zone 1 Group IIC Hazardous Locations, intrinsically safe when connected in accordance with control drawing 30100162.

Challenger 15i-2-FMO terminal display unit, AEx ib IIC T4
Challenger Touch 15i-2-FMO terminal display, AEx ib IIC T4
Challenger 15i-2-FMO UVI terminal display unit, AEx ib IIC T4
Challenger Touch 15i-2-FMO UVI terminal display, AEx ib IIC T4
Challenger 18i-FMO terminal display unit, AEx ib IIC T4
Challenger Touch 18i-FMO terminal display, AEx ib IIC T4
Challenger 18i-FMO UVI terminal display unit, AEx ib IIC T4
Challenger Touch 18i-FMO UVI terminal display, AEx ib IIC T4
Challenger KB terminal keyboard unit, AEx ib IIC T4
Challenger KB-2D terminal keyboard unit, AEx ib IIC T4
Challenger KMU terminal keyboard unit, AEx ib IIC T4
Challenger KMU-2D terminal keyboard unit, AEx ib IIC T4
Challenger MTD mouse/trackball decoder, AEx ib IIC T4
Challenger MTD-2D mouse/trackball decoder, AEx ib IIC T4
Challenger M terminal mouse unit, AEx ib IIC T4
Challenger TB terminal trackball unit, AEx ib IIC T4
Challenger RS11i-X RS232 receiving interface, AEx ib IIC T4
Challenger Cri terminal card reader, AEx ib IIC T4

Issued by: *Frederic J. Cleary*
Frederic J. Cleary / Lead Engineering Associate
Underwriters Laboratories Inc.

Reviewed by: *Paul Kelly*
Paul Kelly / Operations Manager
Underwriters Laboratories Inc.



防爆構造電気機械器具型式検定合格証

申請者	Heisenbergstr. 26-40, D-50169 Kerpen, Germany Gecma Componentis GmbH		
製造者	Heisenbergstr. 26-40, D-50169 Kerpen, Germany Gecma Componentis GmbH		
品名	モニター		
型式の名称	Challenger Touch 15i-2-FMO UVI (同一型式は別表のとおり)		
防爆構造の種類	本質安全防爆構造 (ib)		
対象ガス又は蒸気の 爆発等級及び発火度	II CT 4		
定格	別紙のとおり		
使用条件			
型式検定合格番号	第 TC17671 号		
有効期間	平成18年 7月18日 から 平成21年 7月17日まで		
	平成21年 7月18日 から 平成24年 7月17日まで		
	平成 年 月 日 から 平成 年 月 日まで		
	平成 年 月 日 から 平成 年 月 日まで		

機械等検定規則による型式検定に合格したことを証明する。

平成18年 7月18日

型式検定実施者 社団法人 産業安全技術協会



別紙 1/2

K1 (7-8,11-12,13-14,15-16) 回路

許容電圧 12.5V
許容電流 543mA
許容電力 6.8W
内部キャパシタンス 無視できる値
内部インダクタンス 無視できる値

K2 (1-2) 回路

許容電圧 12.5V
許容電流 543mA
許容電力 6.8W
内部キャパシタンス 無視できる値
内部インダクタンス 無視できる値

K3 (1-2) 回路

許容電圧 12.5V
許容電流 543mA
許容電力 6.8W
内部キャパシタンス 無視できる値
内部インダクタンス 無視できる値

K4 (1-10) 回路

最大電圧 5.5V
最大電流 71mA
許容キャパシタンス 40μF
許容インダクタンス 1000μH



K5 (1-2,3-4,5-6,9-10) 回路

許容電圧 5.5V
内部キャパシタンス 無視できる値
内部インダクタンス 無視できる値

K9 (1-2) 回路

最大電圧 12.5V
最大電流 543mA
最大電力 6.8W

K9 (3-7) 回路

最大電圧 5.5V
最大電流 71mA
許容キャパシタンス 40μF
許容インダクタンス 1000μH

X2 回路

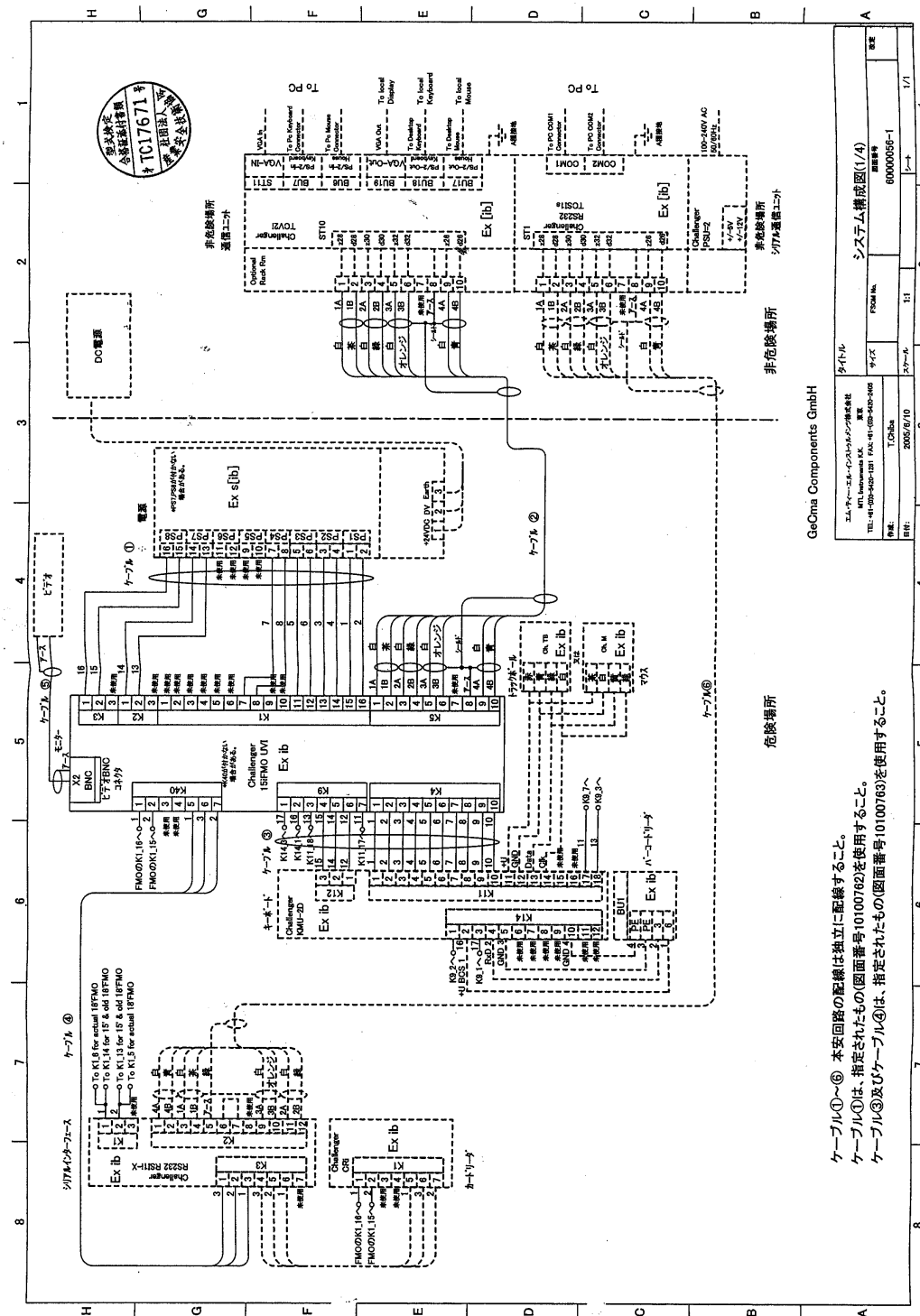
最大電圧 2.5V
最大電流 88mA
最大電力 0.176W
許容キャパシタンス 100μF
許容インダクタンス 4000μH

K 4 0 (5-7) 回路

周围温度 $-10 \sim 60^{\circ}\text{C}$

許容電圧	12.5 V
許容電流	543 mA
許容電力	6.8 W
内部キャパシタンス	無視できる値
内部インダクタンス	無視できる値

許容電圧	12.5V
許容電流	543mA
許容電力	6.8W
内部キャパシタンス	無視できる値
内部インダクタンス	無視できる値



ケーブル①～⑥ 本安回路の配線は独立に配線すること。
 ケーブル①は、指定されたもの(図面番号10100762)を使用すること。
 ケーブル③及びケーブル④は、指定されたもの(図面番号10100763)を使用すること。

8	7	6	5	4	3	2	1																			
H								H																		
G								G																		
F								F																		
E								E																		
D								D																		
C								C																		
B								B																		
A								A																		
1) モニターはシステム構成図(1/4)に示すように構成して使用する。 2) モニターの周囲温度は-10〜60℃とする。 3) K1(7-8, 11-12, 13-14, 15-16)回路に接続する電源は、電源のみで型式検定に合格したもので、次の条件を満足するものとする。 ① 安全保持定格 本安回路最大電圧 12.5V以下 本安回路最大電流 543mA以下 本安回路最大電力 6.8W以下 ② 性能区分及びグループ 性能区分 ib グループ II C ③ 本安回路許容インダクタンス及び本安回路許容キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 本安回路許容インダクタンス> Lw 本安回路許容キャパシタンス> Cw 4) K2(1-2)回路に接続する電源は、電源のみで型式検定に合格したもので、次の条件を満足するものとする。 ① 安全保持定格 本安回路最大電圧 12.5V以下 本安回路最大電流 543mA以下 本安回路最大電力 6.8W以下 ② 性能区分及びグループ 性能区分 ib グループ II C ③ 本安回路許容インダクタンス及び本安回路許容キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 本安回路許容インダクタンス> Lw 本安回路許容キャパシタンス> Cw 5) K3(1-2)回路に接続する電源は、電源のみで型式検定に合格したもので、次の条件を満足するものとする。 ① 安全保持定格 本安回路最大電圧 12.5V以下 本安回路最大電流 543mA以下 本安回路最大電力 6.8W以下 ② 性能区分及びグループ 性能区分 ib グループ II C ③ 本安回路許容インダクタンス及び本安回路許容キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 本安回路許容インダクタンス> Lw 本安回路許容キャパシタンス> Cw																										
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6) K4(1-10)回路に接続して使用するキーボードは、キーボードのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: キーボード 型式: Challenger KMU-2D 型式検定合格番号: TC17665 申請者名: Gecma Components GmbH ① 安全保持定格 本安回路許容電圧 5.5V以上 本安回路許容電流 71mA以上 ② 性能区分及びグループ 性能区分 ib グループ II C ③ 内部インダクタンス及び内部キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 内部インダクタンス (1000 μ H-Lw)以下 内部キャパシタンス (40 μ F-Cw)以下 7) K5(1-2, 3-4, 5-6, 9-10)回路に接続して使用する通信ユニットは、通信ユニットのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: 通信ユニット 型式: Challenger TCV2i 型式検定合格番号: TC17669 申請者名: Gecma Components GmbH ① 安全保持定格 本安回路最大電圧 5.5V以下 ② 性能区分及びグループ 性能区分 ib グループ II C 8) K9(1-2)回路に接続して使用するキーボードは、キーボードのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: キーボード 型式: Challenger KMU-2D 型式検定合格番号: TC17665 申請者名: Gecma Components GmbH ① 安全保持定格 本安回路許容電圧 12.5V以上 本安回路許容電流 543mA以上 ② 性能区分及びグループ 性能区分 ib グループ II C 9) K9(3-7)回路に接続して使用するキーボードは、キーボードのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: キーボード 型式: Challenger KMU-2D 型式検定合格番号: TC17665 申請者名: Gecma Components GmbH ① 性能区分及びグループ 性能区分 ib グループ II C 10) K9(4,5,6)回路に接続して使用するキーボードは、キーボードのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: キーボード 型式: Challenger KMU-2D 型式検定合格番号: TC17665 申請者名: Gecma Components GmbH ① 性能区分及びグループ 性能区分 ib グループ II C																										
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日付:	2005/6/10	スケール	1:1	シート	1/1																					
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8 7 6 5 4 3 2 1

11) X2回路に接続するビデオは、ビデオのみで型式検定に合格したもので、次の条件を満足するものとする。

① 安全保持定格

本安回路許容電圧 2.5V以上
本安回路許容電流 88mA以上
本安回路許容電力 0.176W以上

② 性能区分及びグループ

性能区分 ib
グループ II C

③ 内部インダクタンス及び内部キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係

内部インダクタンス (4000 μ H-Lw)以下
内部キャパシタンス (100 μ F-Cw)以下

12) K40(1-4)回路に接続して使用する電源は、電源のみで型式検定に合格したもので、次の条件を満足するものとする。

品名:電源

型式:PSU14i/8/543

型式検定合格番号:TC17673

申請者名:Geoma Components GmbH

① 安全保持定格

本安回路最大電圧 12.5V以下
本安回路最大電流 543mA以下
本安回路最大電力 6.8W以下

② 性能区分及びグループ

性能区分 ib
グループ II C

13) K40(5-7)回路に接続して使用するシリアルインターフェースは、シリアルインターフェースのみで型式検定に合格したもので、次の条件を満足するものとする。

品名:シリアルインターフェース

型式:Challenger RS232 RS11i-X

型式検定合格番号:TC17666

申請者名:Geoma Components GmbH

① 安全保持定格

本安回路最大電圧 12.5V以下
本安回路最大電流 543mA以下
本安回路最大電力 6.8W以下

② 性能区分及びグループ

性能区分 ib
グループ II C

③ 本安回路許容インダクタンス及び本安回路許容キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係

本安回路許容インダクタンス > Lw
本安回路許容キャパシタンス > Cw



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エム・ディー・エル・インストゥルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		タイトル システム構成図(4/4)	
作成: T.Chiba	サイズ	FSCM No.	図面番号 60000056-4
日付: 2005/6/10	スケール 1:1	シート 1/1	改定

8 7 6 5 4 3 2 1



防爆構造電気機械器具型式検定合格証

申請者	Heisenbergstr. 26-40, D-50169 Kerpen, Germany Gecma Components GmbH		
製造者	Heisenbergstr. 26-40, D-50169 Kerpen, Germany Gecma Components GmbH		
品名	モニター		
型式の名称	Challenger Touch 18i-FMO UVI (同一型式は別表のとおり)		
防爆構造の種類	本質安全防爆構造 (ib)		
対象ガス又は蒸気の 爆発等級及び発火度	II CT 4		
定格	別紙のとおり		
使用条件			
型式検定合格番号	第 TC17663 号		
有効期間	平成18年 7月18日 から 平成21年 7月17日まで		
	平成21年 7月18日 から 平成24年 7月17日まで		
	平成 年 月 日 から 平成 年 月 日まで		
	平成 年 月 日 から 平成 年 月 日まで		

機械等検定規則による型式検定に合格したことを証明する。

平成18年 7月18日

型式検定実施者 社団法人 産業安全技術協会



別紙 1/2

K 1 (3-4, 5-6, 7-8, 11-12, 13-14, 15-16) 回路	許容電圧 12.5 V 許容電流 543 mA 許容電力 6.8 W 内部キャパシタンス 無視できる値 内部インダクタンス 無視できる値
K 2 (1-2) 回路	許容電圧 12.5 V 許容電流 543 mA 許容電力 6.8 W 内部キャパシタンス 無視できる値 内部インダクタンス 無視できる値
K 3 (1-2) 回路	許容電圧 12.5 V 許容電流 543 mA 許容電力 6.8 W 内部キャパシタンス 無視できる値 内部インダクタンス 無視できる値
K 4 (1-10) 回路	最大電圧 5.5 V 最大電流 71 mA 許容キャパシタンス 40 μF 許容インダクタンス 1000 μH
K 5 (1-2, 3-4, 5-6, 9-10) 回路	許容電圧 5.5 V 内部キャパシタンス 無視できる値 内部インダクタンス 無視できる値
K 9 (1-2) 回路	最大電圧 12.5 V 最大電流 543 mA 最大電力 6.8 W
K 9 (3-7) 回路	最大電圧 5.5 V 最大電流 71 mA 許容キャパシタンス 40 μF 許容インダクタンス 1000 μH
X 2 回路	最大電圧 2.5 V 最大電流 88 mA 最大電力 0.176 W 許容キャパシタンス 100 μF 許容インダクタンス 4000 μH



別 紙 2/2

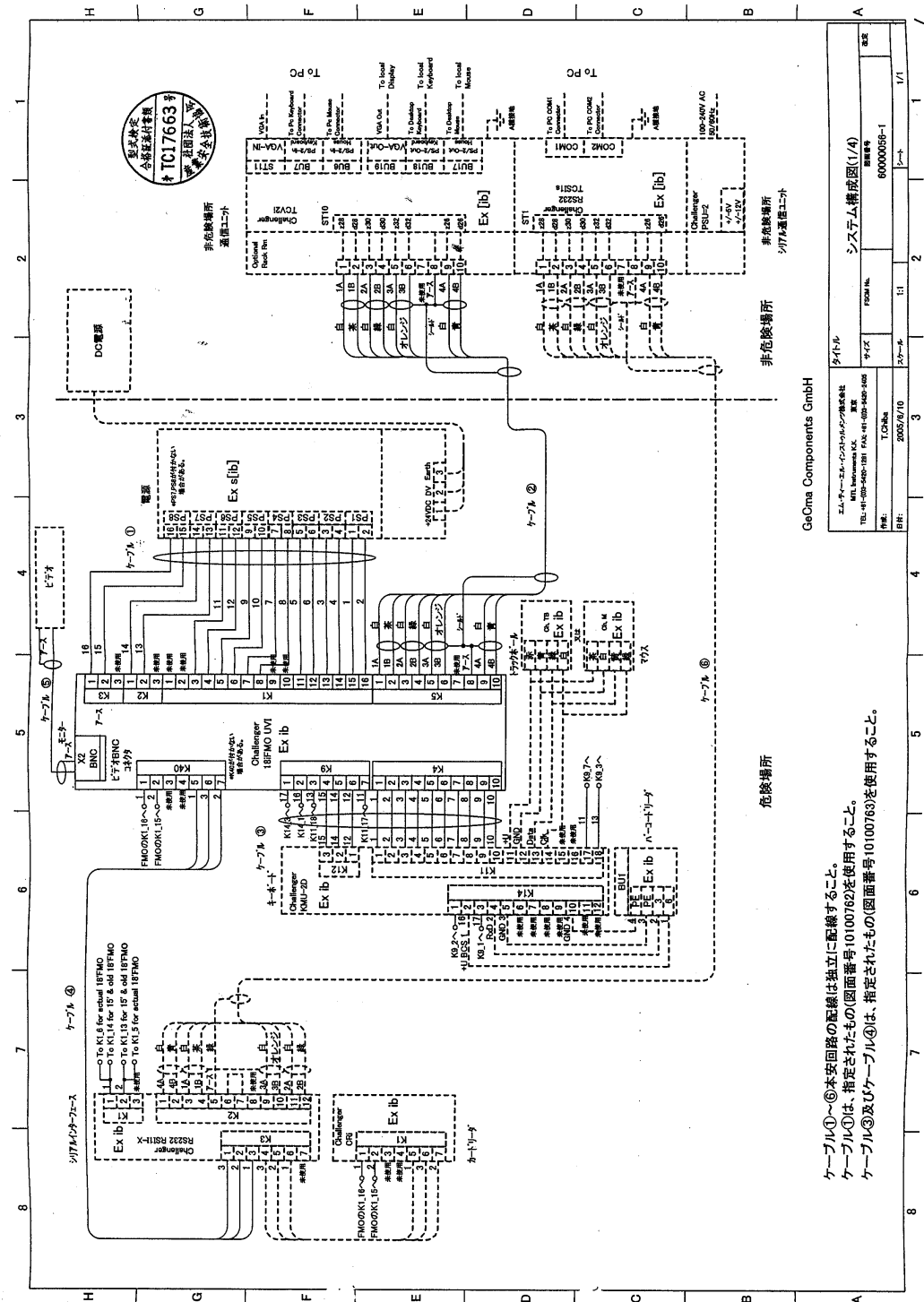
K40 (1-4) 回路

許容電圧 12.5V
許容電流 543mA
許容電力 6.8W
内部キャパシタンス 無視できる値
内部インダクタンス 無視できる値

K40 (5-7) 回路

許容電圧 12.5V
許容電流 543mA
許容電力 6.8W
内部キャパシタンス 無視できる値
内部インダクタンス 無視できる値

周囲温度 -10~60℃



ケーブル①～⑥は本装置の配線は独立に配線すること。
ケーブル①は、指定されたもの(図面番号101007662)を使用すること。
ケーブル③及びケーブル④は、指定されたもの(図面番号101007663)を使用すること。

GeOma Components GmbH

エス・シー・エム・コンポーネンツ・ゲーマー・ゲーマー・ゲーマー
MIL. Components K.K.
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E-MAIL: T.O.M.A.
2005/6/10
00000056-1

システム構成図(1/4)

項目	内容
タイトル	システム構成図(1/4)
形式	形式
図面番号	60000056-1
ページ	1/1

	8	7	6	5	4	3	2	1																	
H	1) モニターはシステム構成図(1/4)に示すように構成して使用する。 2) モニターの周囲温度は-10~60℃とする。 3) K1(3-4, 5-6, 7-8, 11-12, 13-14, 15-16)回路に接続する電源は、電源のみで型式検定に合格したもので、次の条件を満足するものとする。 ① 安全保持定格 本安回路最大電圧 12.5V以下 本安回路最大電流 543mA以下 本安回路最大電力 6.8W以下 ② 性能区分及びグループ 性能区分 ib グループ II C ③ 本安回路許容インダクタンス及び本安回路許容キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 本安回路許容インダクタンス> Lw 本安回路許容キャパシタンス> Cw								H																
G									G																
F	4) K2(1-2)回路に接続する電源は、電源のみで型式検定に合格したもので、次の条件を満足するものとする。 ① 安全保持定格 本安回路最大電圧 12.5V以下 本安回路最大電流 543mA以下 本安回路最大電力 6.8W以下 ② 性能区分及びグループ 性能区分 ib グループ II C ③ 本安回路許容インダクタンス及び本安回路許容キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 本安回路許容インダクタンス> Lw 本安回路許容キャパシタンス> Cw								F																
E									E																
D	5) K3(1-2)回路に接続する電源は、電源のみで型式検定に合格したもので、次の条件を満足するものとする。 ① 安全保持定格 本安回路最大電圧 12.5V以下 本安回路最大電流 543mA以下 本安回路最大電力 6.8W以下 ② 性能区分及びグループ 性能区分 ib グループ II C ③ 本安回路許容インダクタンス及び本安回路許容キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 本安回路許容インダクタンス> Lw 本安回路許容キャパシタンス> Cw								D																
C									C																
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A	GeCma Components GmbH <table border="1"><thead><tr><th colspan="2">エム・ティー・エル・インストゥルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405</th><th colspan="2">タイトル システム構成図(2/4)</th></tr><tr><th>作成:</th><th>T.Chiba</th><th>サイズ</th><th>FSCM No.</th><th>図面番号 60000056-2</th><th>改定</th></tr><tr><th>日付:</th><th>2005/6/10</th><th>スケール</th><th>1:1</th><th>シート</th><th>1/1</th></tr></thead></table>								エム・ティー・エル・インストゥルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		タイトル システム構成図(2/4)		作成:	T.Chiba	サイズ	FSCM No.	図面番号 60000056-2	改定	日付:	2005/6/10	スケール	1:1	シート	1/1	A
エム・ティー・エル・インストゥルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		タイトル システム構成図(2/4)																							
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日付:	2005/6/10	スケール	1:1	シート	1/1																				

	8	7	6	5	4	3	2	1	
H	6) モニターのK4(1-10)回路に接続して使用するキーボードは、キーボードのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: キーボード 型式: Challenger KMU-2D 型式検定合格番号: TC17665 申請者名: Gecma Components GmbH ① 安全保持定格 本安回路許容電圧 5.5V以上 本安回路許容電流 71mA以上 ② 性能区分及びグループ 性能区分 ib グループ II C ③ 内部インダクタンス及び内部キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 内部インダクタンス(1000μH-Lw)以下 内部キャパシタンス(40μF-Cw)以下								H
G									G
F	7) K5(1-2, 3-4, 5-6, 9-10)回路に接続して使用する通信ユニットは、通信ユニットのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: 通信ユニット 型式: Challenger TCV2i 型式検定合格番号: TC17669 申請者名: Gecma Components GmbH ① 安全保持定格 本安回路最大電圧 5.5V以下 ② 性能区分及びグループ 性能区分 ib グループ II C								F
E									E
D	8) K9(1-2)回路に接続して使用するキーボードは、キーボードのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: キーボード 型式: Challenger KMU-2D 型式検定合格番号: TC17665 申請者名: Gecma Components GmbH ① 安全保持定格 本安回路許容電圧 12.5V以上 本安回路許容電流 543mA以上 ② 性能区分及びグループ 性能区分 ib グループ II C								D
C									C
B	9) K9(3-7)回路に接続して使用するキーボードは、キーボードのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: キーボード 型式: Challenger KMU-2D 型式検定合格番号: TC17665 申請者名: Gecma Components GmbH ① 性能区分及びグループ 性能区分 ib グループ II C								B
A	10) K9(4,5,6)回路に接続して使用するキーボードは、キーボードのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: キーボード 型式: Challenger KMU-2D 型式検定合格番号: TC17665 申請者名: Gecma Components GmbH ① 性能区分及びグループ 性能区分 ib グループ II C								A

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エム・ティー・エル・インストゥルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		タイトル システム構成図(3/4)			
作成:	T.Chiba	サイズ	FSCM No.	図面番号 60000056-3	改定
日付:	2005/6/10	スケール	1:1	シート	1/1

8	7	6	5	4	3	2	1												
11) X2回路に接続するビデオは、ビデオのみで型式検定に合格したもので、次の条件を満足するものとする。																			
① 安全保持定格 本安回路許容電圧 2.5V以上 本安回路許容電流 88mA以上 本安回路許容電力 0.176W以上																			
② 性能区分及びグループ 性能区分 ib グループ IIC																			
③ 内部インダクタンス及び内部キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 内部インダクタンス (4000μH-Lw)以下 内部キャパシタンス (100μF-Cw)以下																			
12) K40(1-4)回路に接続して使用する電源は、電源のみで型式検定に合格したもので、次の条件を満足するものとする。																			
品名:電源 型式:PSU14i/8/543 型式検定合格番号:TC17673 申請者名:Gecma Components GmbH																			
① 安全保持定格 本安回路最大電圧 12.5V以下 本安回路最大電流 543mA以下 本安回路最大電力 6.8W以下																			
② 性能区分及びグループ 性能区分 ib グループ IIC																			
13) K40(5-7)回路に接続して使用するシリアルインターフェースは、シリアルインターフェースのみで型式検定に合格したもので、次の条件を満足するものとする。																			
品名:シリアルインターフェース 型式:Challenger RS232 RSI1i-X 型式検定合格番号:TC17666 申請者名:Gecma Components GmbH																			
① 安全保持定格 本安回路最大電圧 12.5V以下 本安回路最大電流 543mA以下 本安回路最大電力 6.8W以下																			
② 性能区分及びグループ 性能区分 ib グループ IIC																			
③ 本安回路許容インダクタンス及び本安回路許容キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 本安回路許容インダクタンス> Lw 本安回路許容キャパシタンス> Cw																			
型式検定 合格証添付書類 TC17663号 社団法人 安全技術協会																			
GeCma Components GmbH																			
<table><tr><td colspan="2">エム・ティー・エル・インストルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405</td><td colspan="2">タイトル システム構成図(4/4)</td></tr><tr><td>作成: T.Chiba</td><td>サイズ</td><td>FSCM No.</td><td>図面番号 60000056-4</td></tr><tr><td>日付: 2005/6/10</td><td>スケール 1:1</td><td>シート 1/1</td><td>改定</td></tr></table>								エム・ティー・エル・インストルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		タイトル システム構成図(4/4)		作成: T.Chiba	サイズ	FSCM No.	図面番号 60000056-4	日付: 2005/6/10	スケール 1:1	シート 1/1	改定
エム・ティー・エル・インストルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		タイトル システム構成図(4/4)																	
作成: T.Chiba	サイズ	FSCM No.	図面番号 60000056-4																
日付: 2005/6/10	スケール 1:1	シート 1/1	改定																
8	7	6	5	4	3	2	1												



防爆構造電気機械器具型式検定合格証

別 紙 1/2

申請者	Heisenbergstr. 26-40, D-50169 Kerpen, Germany Gecma Components GmbH		
製造者	Heisenbergstr. 26-40, D-50169 Kerpen, Germany Gecma Components GmbH		
品名	キーボード		
型式の名称	Challenger KMU-2D (同一型式は別表のとおり)		
防爆構造の種類	本質安全防爆構造 (ib)		
対象ガス又は蒸気の 爆発等級及び発火度	IICT4		
定 格	別紙のとおり		
使用条件			
型式検定合格番号	第 TC17665 号		
有効期間	平成18年 7月18日 から 平成21年 7月17日まで		
	平成21年 7月18日 から 平成24年 7月17日まで		
	平成 年 月 日 から 平成 年 月 日まで		
	平成 年 月 日 から 平成 年 月 日まで		

K11 (1-8) 回路

許容電圧 5.5V
許容電流 71mA
内部キャパシタンス 18μF
内部インダクタンス 無視できる値

K11 (9-10) 回路

許容電圧 5.5V
許容電流 71mA
内部キャパシタンス 0.2μF
内部インダクタンス 無視できる値

K11 (11-14) 回路

最大電圧 5.5V
最大電流 71mA
許容キャパシタンス 40μF
許容インダクタンス 1000μH

K11 (17-18) 回路

最大電圧 5.5V
最大電流 71mA
許容キャパシタンス 40μF
許容インダクタンス 1000μH

K12 (1-3) 回路

最大電圧 5.5V
最大電流 1mA
許容キャパシタンス 40μF
許容インダクタンス 1000μH

K14 (3,1) 回路

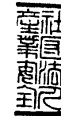
許容電圧 12.5V
許容電流 543mA
内部キャパシタンス 0.022μF
内部インダクタンス 無視できる値

K14 (5,2) 回路

最大電圧 5.43V
最大電流 356mA
最大電力 1.1W
許容キャパシタンス 58μF
許容インダクタンス 280μH

K14 (4,6,7) 回路

最大電圧 5.43V
最大電流 3.8mA
最大電力 0.0057W
許容キャパシタンス 58μF
許容インダクタンス 2000μH



機械等検定規則による型式検定に合格したことを証明する。

平成18年 7月18日

型式検定実施者 社団法人 産業安全技術協会長

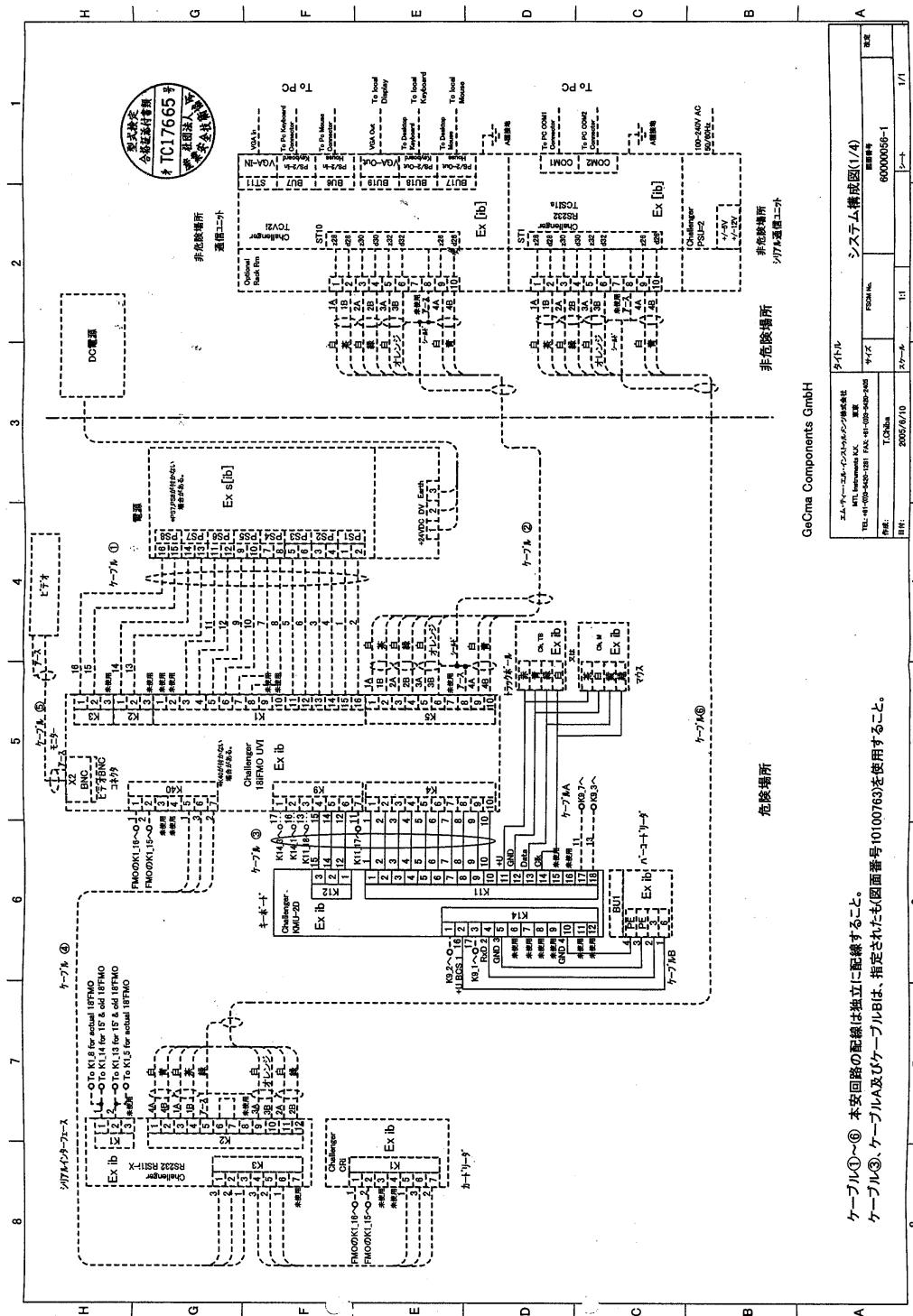


別 紙 2/2

K14 (8,9,11,10) 回路

周囲温度 -10~60℃

最大電圧 10.8V
最大電流 15mA
最大電力 0.047W
許容キャパシタンス 2μF
許容インダクタンス 150μH



ケーブル①～⑥ 本回路の配線は独立に配線すること。
ケーブル③、ケーブルA及びケーブルBは、指定された図面番号10100763を使用すること。

GaCma Components GmbH

システム構成図(1/4)		図面番号	6000056-1
タイトル	システム構成図	図面番号	6000056-1
作成	作成	図面番号	6000056-1
承認	承認	図面番号	6000056-1
発行	発行	図面番号	6000056-1
発行日	2005/9/10	図面番号	6000056-1
発行部	発行部	図面番号	6000056-1

8	7	6	5	4	3	2	1																									
H	1) キーボードはシステム構成図(1/4)に示すように構成して使用する。 2) キーボードの周囲温度は-10~60℃とする。 3) K11(1-8)回路に接続して使用するモニターは、モニターのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: モニター 型式: Challenger Touch 18i-FMO UVI 型式検定合格番号: TC17663 申請者名: Gecma Components GmbH ① 安全保持定格 本安回路最大電圧 5.5V以下 本安回路最大電流 71mA以下 ② 性能区分及びグループ 性能区分 ib グループ IIC 品名: モニター 型式: Challenger Touch 15i-2-FMO UVI 型式検定合格番号: TC17671 申請者名: Gecma Components GmbH ④ K11(9-10)回路に接続して使用するモニターは、モニターのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: モニター 型式: Challenger Touch 18i-FMO UVI 型式検定合格番号: TC17663 申請者名: Gecma Components GmbH ① 安全保持定格 本安回路最大電圧 5.5V以下 本安回路最大電流 71mA以下 ② 性能区分及びグループ 性能区分 ib グループ IIC 品名: モニター 型式: Challenger Touch 15i-2-FMO UVI 型式検定合格番号: TC17671 申請者名: Gecma Components GmbH ⑤ K11(11-14)回路に接続して使用するマウス又はトラックボールは、マウス又はトラックボールのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: マウス 型式: Challenger M 型式検定合格番号: TC17664 申請者名: Gecma Components GmbH ① 安全保持定格 本安回路許容電圧 5.5V以上 本安回路許容電流 71mA以上 ② 性能区分及びグループ 性能区分 ib グループ IIC ③ 内部インダクタンス及び内部キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 内部インダクタンス (1000 μH-Lw)以下 内部キャパシタンス (40 μF-Cw)以下 品名: トラックボール 型式: Challenger TB 型式検定合格番号: TC17668 申請者名: Gecma Components GmbH ⑥ K11(17-18)回路に接続して使用するモニターは、モニターのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: モニター 型式: Challenger Touch 18i-FMO UVI 型式検定合格番号: TC17663 申請者名: Gecma Components GmbH ① 性能区分及びグループ 性能区分 ib グループ IIC 品名: モニター 型式: Challenger Touch 15i-2-FMO UVI 型式検定合格番号: TC17671 申請者名: Gecma Components GmbH							H																								
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A	GeCma Components GmbH <table border="1" style="width: 100%;"> <tr> <td colspan="4">エム・ティー・エル・インストゥルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405</td> <td colspan="4">タイトル システム構成図(2/4)</td> </tr> <tr> <td>作成:</td> <td>T.Chiba</td> <td>サイズ</td> <td>FSCM No.</td> <td>図面番号</td> <td>60000056-2</td> <td>改定</td> <td></td> </tr> <tr> <td>日付:</td> <td>2005/6/10</td> <td>スケール</td> <td>1:1</td> <td>シート</td> <td>1/1</td> <td colspan="2"></td> </tr> </table>							エム・ティー・エル・インストゥルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405				タイトル システム構成図(2/4)				作成:	T.Chiba	サイズ	FSCM No.	図面番号	60000056-2	改定		日付:	2005/6/10	スケール	1:1	シート	1/1			A
エム・ティー・エル・インストゥルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405				タイトル システム構成図(2/4)																												
作成:	T.Chiba	サイズ	FSCM No.	図面番号	60000056-2	改定																										
日付:	2005/6/10	スケール	1:1	シート	1/1																											



8	7	6	5	4	3	2	1																									
H	7) K12(1-3)回路に接続して使用するモニターは、モニターのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: モニター 型式: Challenger Touch 18i-FMO UVI 型式検定合格番号: TC17663 申請者名: Gecma Components GmbH ① 性能区分及びグループ 性能区分 ib グループ IIC 品名: モニター 型式: Challenger Touch 15i-2-FMO UVI 型式検定合格番号: TC17671 申請者名: Gecma Components GmbH 8) K14(3,1)回路に接続して使用するモニターは、モニターのみで型式検定に合格したもので、次の条件を満足するものとする。 品名: モニター 型式: Challenger Touch 18i-FMO UVI 型式検定合格番号: TC17663 申請者名: Gecma Components GmbH ① 安全保持定格 本安回路最大電圧 12.5V以下 本安回路最大電流 543mA以下 ② 性能区分及びグループ 性能区分 ib グループ IIC 品名: モニター 型式: Challenger Touch 15i-2-FMO UVI 型式検定合格番号: TC17671 申請者名: Gecma Components GmbH 9) K14(5,2)回路に接続するバーコードリーダは、バーコードリーダのみで型式検定に合格したもので、次の条件を満足するものとする。 ① 安全保持定格 本安回路許容電圧 5.43V以上 本安回路許容電流 356mA以上 本安回路許容電力 1.1W以上 ② 性能区分及びグループ 性能区分 ib グループ IIC ③ 内部インダクタンス及び内部キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 内部インダクタンス (280 μH-Lw)以下 内部キャパシタンス (58 μF-Cw)以下 品名: モニター 型式: Challenger Touch 15i-2-FMO UVI 型式検定合格番号: TC17671 申請者名: Gecma Components GmbH 10) K14(4,6,7)回路に接続するバーコードリーダは、バーコードリーダのみで型式検定に合格したもので、次の条件を満足するものとする。 ① 安全保持定格 本安回路許容電圧 5.43V以上 本安回路許容電流 3.8mA以上 本安回路許容電力 0.0057W以上 ② 性能区分及びグループ 性能区分 ib グループ IIC ③ 内部インダクタンス及び内部キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 内部インダクタンス (2000 μH-Lw)以下 内部キャパシタンス (58 μF-Cw)以下 品名: モニター 型式: Challenger Touch 15i-2-FMO UVI 型式検定合格番号: TC17671 申請者名: Gecma Components GmbH							H																								
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エム・ティー・エル・インストゥルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405				タイトル システム構成図(3/4)																												
作成:	T.Chiba	サイズ	FSCM No.	図面番号	60000056-3	改定																										
日付:	2005/6/10	スケール	1:1	シート	1/1																											



8 7 6 5 4 3 2 1

11) K14(8,9,11,10)回路に接続するバーコードリーダは、バーコードリーダのみで型式検定に合格したもので、次の条件を満足するものとする。

① 安全保持定格

本安回路許容電圧 10.8V以上
本安回路許容電流 15mA以上
本安回路許容電力 0.047W以上

② 性能区分及びグループ

性能区分 ib
グループ II C

③ 内部インダクタンス及び内部キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係

内部インダクタンス (150 μ H-Lw)以下
内部キャパシタンス (2 μ F-Cw)以下



GeCma Components GmbH

エム・ティー・エル・インストゥルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		タイトル システム構成図(4/4)	
作成: T.Chiba	サイズ	FSCM No.	図面番号 60000056-4
日付: 2005/6/10	スケール	1:1	シート 1/1

8 7 6 5 4 3 2 1



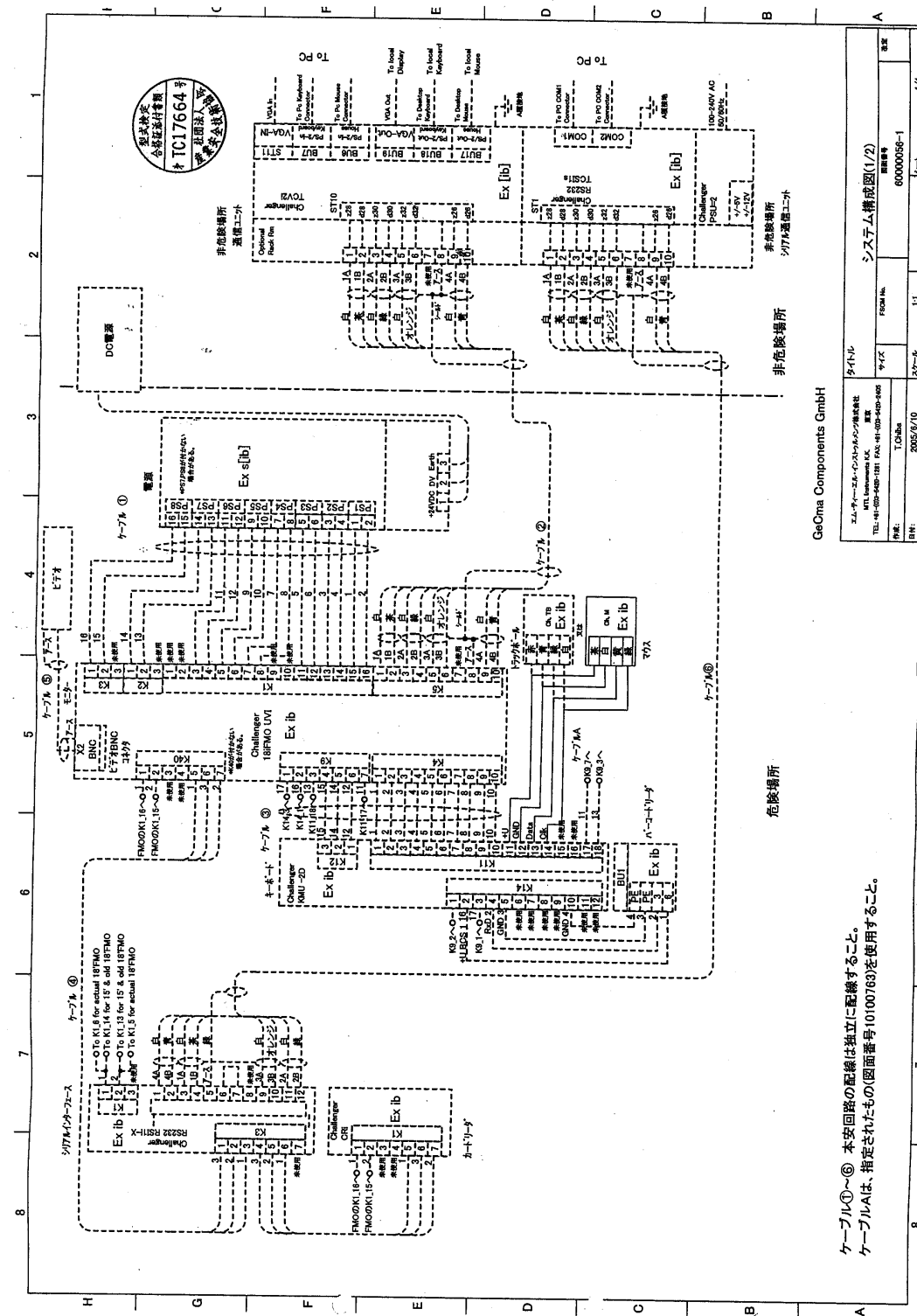
防爆構造電気機械器具型式検定合格証

申 請 者	Heisenbergstr. 26-40, D-50169 Kerpen, Germany Gecma Components GmbH		
製 造 者	Heisenbergstr. 26-40, D-50169 Kerpen, Germany Gecma Components GmbH		
品 名	マウス		
型 式 の 名 称	Challenger M		
防 爆 構 造 の 種 類	本質安全防爆構造 (i b)		
対象ガス又は蒸気の 爆発等級及び発火度	I I C T 4		
定 格	本安回路許容電圧 5 . 5 V 本安回路許容電流 7 1 mA 内部キャパシタンス 1 3 μ F 内部インダクタンス 無視できる値 周囲温度 - 1 0 ～ 6 0 ℃		
使 用 条 件			
型式検定合格番号	第 T C 1 7 6 6 4 号		
有 効 期 間	平成 1 8 年 7 月 1 8 日 から 平成 2 1 年 7 月 1 7 日まで		
	平成 21 年 7 月 18 日 から 平成 24 年 7 月 17 日まで		
	平成 年 月 日 から 平成 年 月 日まで		
	平成 年 月 日 から 平成 年 月 日まで		

機械等検定規則による型式検定に合格したことを証明する。

平成18年 7月18日

型式検定実施者 社団法人 産業安全技術協会



ケーブル①～⑥ 本安回路の配線は独立に配線すること。
ケーブルAは、指定されたもの(図面番号10100763)を使用すること。

Geoma Components GmbH

タイトル	システム構成図(1/2)
図面番号	60000036-1
サイズ	A3
スケール	1:1
作成者	T.O. Masuda
日付	2005/6/10

	8	7	6	5	4	3	2	1																									
H	1) マウスはシステム構成図(1/2)に示すように構成して使用する。								H																								
	2) マウスの周囲温度は-10~60℃とする。																																
	3) マウスWire(brown,white,yellow,green)回路に接続するキーボードは、キーボードのみで型式検定に合格したもので、次の条件を満足するものとする。																																
	品名:キーボード																																
	型式:Challenger KMU-2D																																
	型式検定合格番号:TC17665																																
	申請者名:Gecma Components GmbH																																
G	① 安全保持定格								G																								
	本安回路最大電圧 5.5V以下																																
	本安回路最大電流 71mA以下																																
	② 性能区分及びグループ																																
	性能区分 ib																																
	グループ IIC																																
	③ 本安回路許容インダクタンス及び本安回路許容キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係																																
F	本安回路許容インダクタンス > Lw								F																								
	本安回路許容キャパシタンス ≥ (13μF + Cw)																																
E									E																								
D									D																								
C									C																								
B									B																								
A	GeCma Components GmbH								A																								
	<table><tr><td colspan="2">エム・ティー・エル・インストゥルメンツ株式会社</td><td colspan="2">タイトル</td></tr><tr><td colspan="2">MTL Instruments K.K. 東京</td><td colspan="2">システム構成図(2/2)</td></tr><tr><td colspan="2">TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405</td><td>サイズ</td><td>FSCM No.</td></tr><tr><td colspan="2">作成: T.Chiba</td><td colspan="2">図面番号</td></tr><tr><td colspan="2">日付: 2005/6/10</td><td>スケール</td><td>1:1</td></tr><tr><td colspan="2"></td><td>シート</td><td>1/1</td></tr></table>								エム・ティー・エル・インストゥルメンツ株式会社		タイトル		MTL Instruments K.K. 東京		システム構成図(2/2)		TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		サイズ	FSCM No.	作成: T.Chiba		図面番号		日付: 2005/6/10		スケール	1:1			シート	1/1	
エム・ティー・エル・インストゥルメンツ株式会社		タイトル																															
MTL Instruments K.K. 東京		システム構成図(2/2)																															
TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		サイズ	FSCM No.																														
作成: T.Chiba		図面番号																															
日付: 2005/6/10		スケール	1:1																														
		シート	1/1																														
	8	7	6	5	4	3	2	1																									



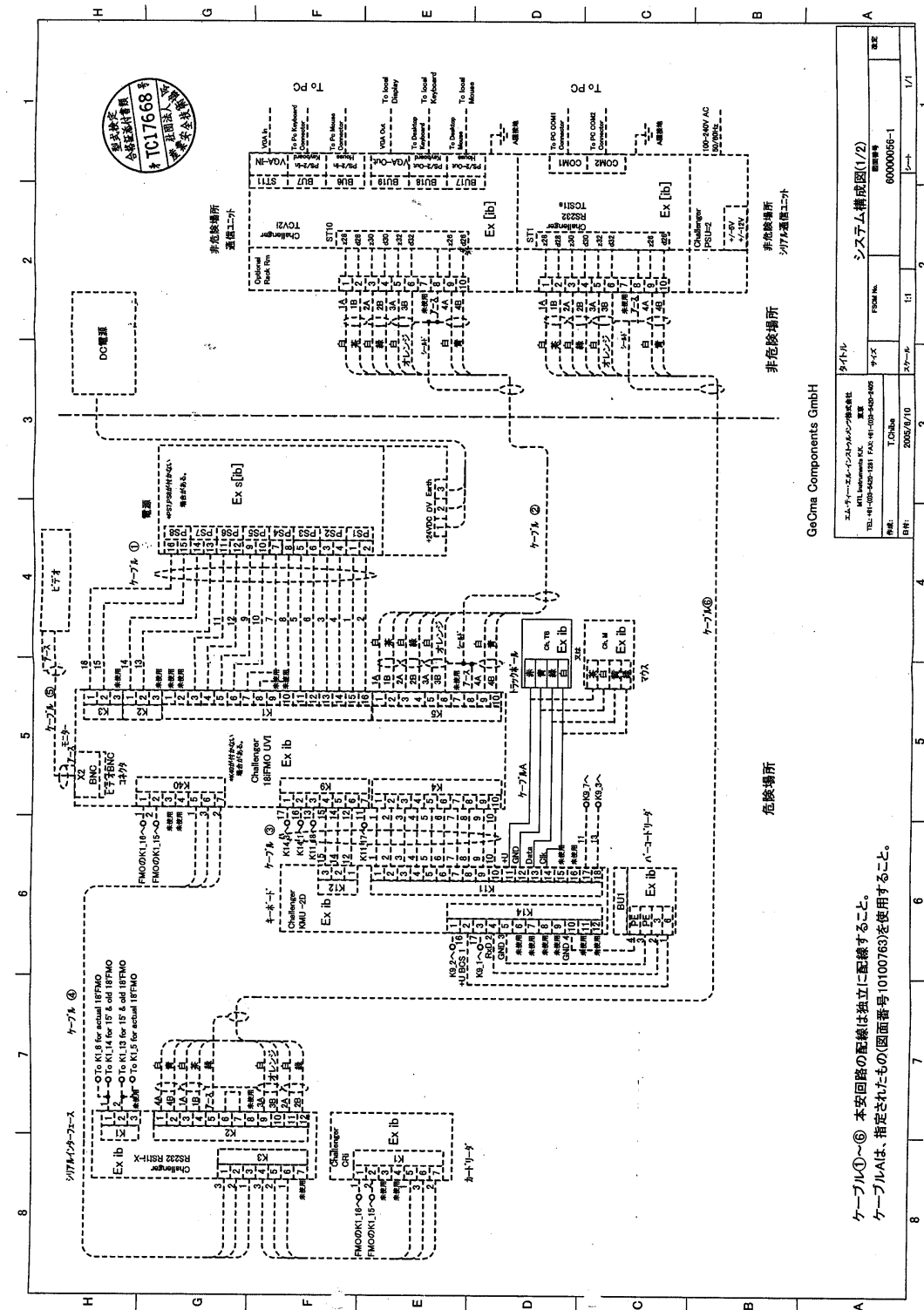
防爆構造電気機械器具型式検定合格証

申請者	Heisenbergstr. 26-40, D-50169 Kerpen, Germany Gecma Components GmbH		
製造者	Heisenbergstr. 26-40, D-50169 Kerpen, Germany Gecma Components GmbH		
品名	トラックボール		
型式の名称	Challenger TB		
防爆構造の種類	本質安全防爆構造 (ib)		
対象ガス又は蒸気の 爆発等級及び発火度	IICT4		
定格	本安回路許容電圧 5.5V 本安回路許容電流 71mA 内部キャパシタンス 10μF 内部インダクタンス 無視できる値 周囲温度 -10～60℃		
使用条件			
型式検定合格番号	第 TC17668 号		
有効期間	平成18年 7月18日 から 平成21年 7月17日まで		
	平成21年 7月18日 から 平成24年 7月17日まで		
	平成 年 月 日 から 平成 年 月 日まで		
	平成 年 月 日 から 平成 年 月 日まで		

機械等検定規則による型式検定に合格したことを証明する。

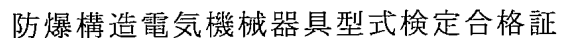
平成18年 7月18日

型式検定実施者 社団法人 産業安全技術協会長



8	7	6	5	4	3	2	1																		
H								H																	
	1)トラックボールはシステム構成図(1/2)に示すように構成して使用する。 2)トラックボールの周囲温度は-10~60℃とする。 3)トラックボールWire(red,blue,green,white)回路に接続するキーボードは、キーボードのみで型式検定に合格したもので、次の条件を満足するものとする。 品名:キーボード 型式:Challenger KMU-2D 型式検定合格番号:TC17665 申請者名:Gecma Components GmbH																								
G	① 安全保持定格 本安回路最大電圧 5.5V以下 本安回路最大電流 71mA以下							G																	
	② 性能区分及びグループ 性能区分 ib グループ IIC																								
F	③ 本安回路許容インダクタンス及び本安回路許容キャパシタンスと本安回路外部配線のインダクタンス(Lw)及びキャパシタンス(Cw)との関係 本安回路許容インダクタンス> Lw 本安回路許容キャパシタンス≧ (10μF+Cw)							F																	
E								E																	
D								D																	
C								C																	
B								B																	
A	GeCma Components GmbH							A																	
<table><tr><td colspan="2">エム・ティー・エル・インストルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405</td><td colspan="2">タイトル システム構成図(2/2)</td><td colspan="2">改定</td></tr><tr><td colspan="2">作成: T.Chiba</td><td>サイズ</td><td>FSCM No.</td><td>図面番号 60000056-2</td><td></td></tr><tr><td colspan="2">日付: 2005/6/10</td><td>スケール 1:1</td><td colspan="3">シート 1/1</td></tr></table>								エム・ティー・エル・インストルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		タイトル システム構成図(2/2)		改定		作成: T.Chiba		サイズ	FSCM No.	図面番号 60000056-2		日付: 2005/6/10		スケール 1:1	シート 1/1		
エム・ティー・エル・インストルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		タイトル システム構成図(2/2)		改定																					
作成: T.Chiba		サイズ	FSCM No.	図面番号 60000056-2																					
日付: 2005/6/10		スケール 1:1	シート 1/1																						
8	7	6	5	4	3	2	1	2																	

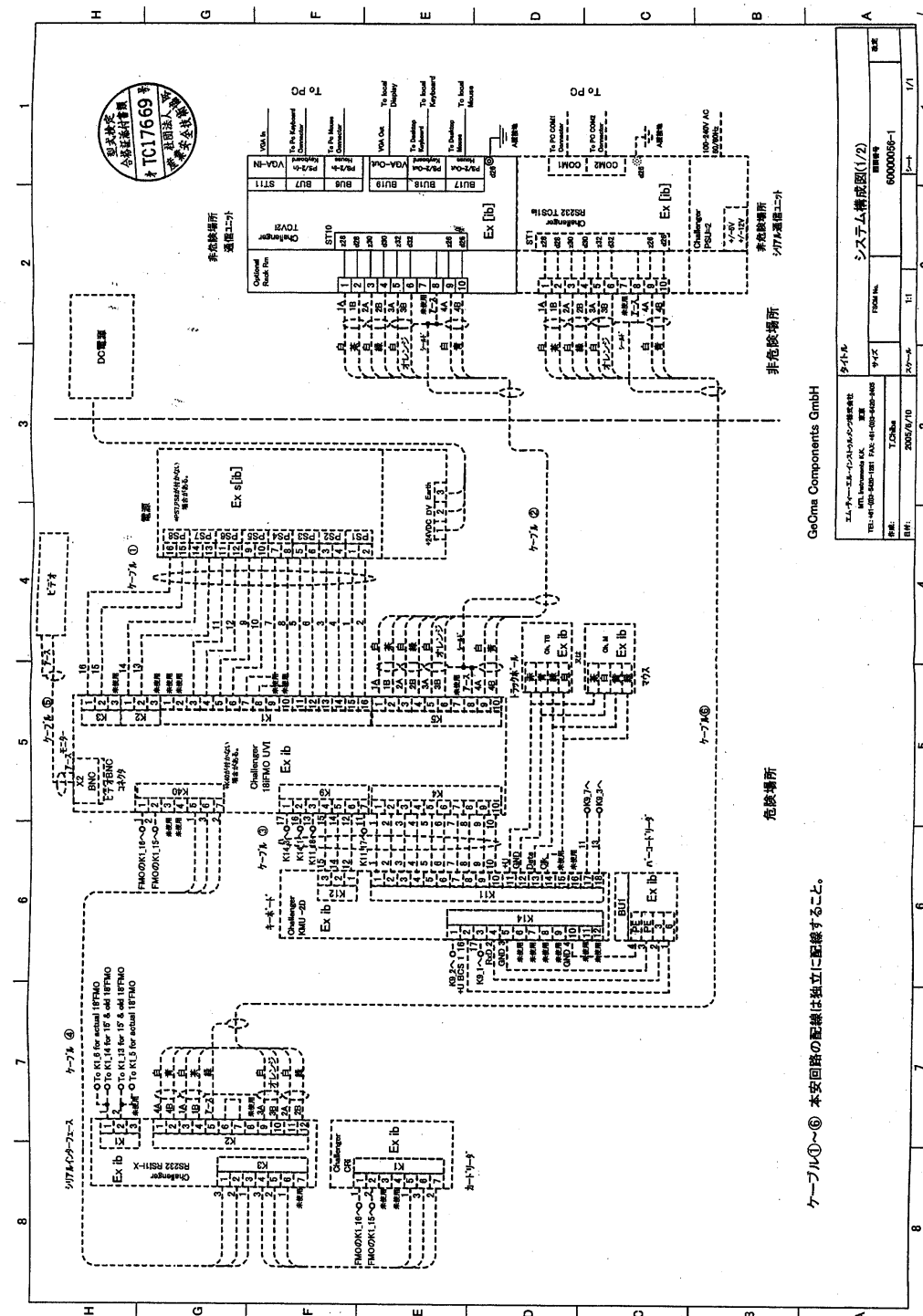




機械等検定規則による型式検定に合格したことを証明する。

平成18年 7月18日

型式検定実施者 社団法人 産業安全技術協会長



ケーブル①～⑥ 本安回路の配線は独立に配線すること。

8	7	6	5	4	3	2	1																	
H	1) 通信ユニットはシステム構成図(1/2)に示すように構成して使用する。							H																
	2) 通信ユニットの周囲温度は-10~60℃とする。																							
	3) 通信ユニットの接地は、単独でA種接地工事に準じて行う。																							
	4) 通信ユニットは非危険場所に設置する。																							
	5) ST10(d26-z26,d28-z28,d30-z30,d32-z32)回路に接続するモニターは、モニターのみで型式検定に合格したもので、次の条件を満足するものとする。																							
G	品名:モニター			品名:モニター				G																
	型式:Challenger Touch 18i FMO UVI			型式: Challenger Touch 15i-2-FMO UVI																				
	型式検定合格番号: TC17663			型式検定合格番号: TC17671																				
	申請者名:Gecma Components GmbH			申請者名:Gecma Components GmbH																				
	① 安全保持定格																							
	本安回路許容電圧 5.5V以上																							
	② 性能区分及びグループ																							
	性能区分 ib																							
	グループ II C																							
F	6)通信ユニットと接続して使用する一般機器は、その入力電源、機器内部の電圧等が正常状態及び異常状態に於いてもAC250V 50/60Hz、DC250Vを超えないものとする。							F																
E								E																
D								D																
C								C																
B								B																
A	GeCma Components GmbH							A																
<table><tr><td colspan="2">エム・ティー・エル・インストルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405</td><td colspan="2">タイトル システム構成図(2/2)</td></tr><tr><td>作成:</td><td>T.Chiba</td><td>サイズ</td><td>FSCM No.</td><td>図面番号 60000056-2</td><td>改定</td></tr><tr><td>日付:</td><td>2005/6/10</td><td>スケール 1:1</td><td>シート 1/1</td><td colspan="2"></td></tr></table>								エム・ティー・エル・インストルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		タイトル システム構成図(2/2)		作成:	T.Chiba	サイズ	FSCM No.	図面番号 60000056-2	改定	日付:	2005/6/10	スケール 1:1	シート 1/1			2
エム・ティー・エル・インストルメンツ株式会社 MTL Instruments K.K. 東京 TEL: +81-(0)3-5420-1281 FAX: +81-(0)3-5420-2405		タイトル システム構成図(2/2)																						
作成:	T.Chiba	サイズ	FSCM No.	図面番号 60000056-2	改定																			
日付:	2005/6/10	スケール 1:1	シート 1/1																					





СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС DE.ME92.B02540

Срок действия с 17.08.2011

по 16.08.2014

№ 0568359

ОРГАН ПО СЕРТИФИКАЦИИ РОСС RU.0001.11ME92
НЕГОСУДАРСТВЕННЫЙ ФОНД "МЕЖОТРАСЛЕВОЙ ОРГАН СЕРТИФИКАЦИИ "СЕРТИУМ"
Юридический адрес: Россия, 117910, г. Москва, Ленинский проспект, 29. Адрес ОС: 140004,
г. Люберцы ул.Электрификации, 26; тел./факс 554 70 27, 554 44 03. E-mail: sertium@mail.ru.

ПРОДУКЦИЯ

Взрывозащищенные компьютерные терминалы Gesma
Challenger и панельные компьютеры Gesma Explorer с комплектующими
компонентами в составе согласно Приложению 1
Техническая документация изготовителя
Серийный выпуск

код ОК 005 (ОКП):
40 0000

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ

ГОСТ 12.2.007.0-75; ГОСТ Р 51330.0-99; ГОСТ Р 51330.6-99;
ГОСТ Р 51330.8-99; ГОСТ Р 51330.10-99; ГОСТ Р 51330.17-99;
ГОСТ Р 52350.28-2007; Правил устройства электроустановок (гл. 7.3)

код ТН ВЭД России:

ИЗГОТОВИТЕЛЬ

Фирма «GeCma Components GmbH»
Heisenbergstrasse 26-40, D-50169 Kerpen, Германия

СЕРТИФИКАТ ВЫДАН

Фирме «GeCma Components GmbH»
Heisenbergstrasse 26-40, D-50169 Kerpen, Германия

НА ОСНОВАНИИ

Протокола № 186ME-2011 экспертизы технической документации, проверок конструкции и сертификационных испытаний от 01.08.11г.(НФ МОС "Сертиум" - ИЛ взрывозащищенного и рудничного оборудования, аттестат аккредитации № РОСС RU.0001.21ГБ05 от 03.02.10 г.);
Акта о результатах анализа производства от 29.06.2011 г. (НФ "МОС "Сертиум" (ОС взрывозащищенного и рудничного оборудования), аттестат аккредитации № РОСС RU.0001.11ME92 от 03.02.10 г.);
Сертификата системы качества ISO 9001:2008 № 01 100 80108 от 22.04.2009 г.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Схема сертификации - 1а. Знак соответствия наносится на несъемную часть каждой единицы сертифицированной продукции и (или) на сопроводительную техническую документацию по ГОСТ Р 50460-92. Сертификат действителен с Приложениями 1 и 2.



Руководитель органа

А.Н.Шатило
подпись

А.Н.Шатило
инициалы, фамилия

Эксперт

Л.В.Тарасова
подпись

Л.В.Тарасова
инициалы, фамилия

Сертификат имеет юридическую силу на всей территории Российской Федерации

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р

ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ТЕХНИЧЕСКОМУ РЕГУЛИРОВАНИЮ И МЕТРОЛОГИИ

№ 0453623

ПРИЛОЖЕНИЕ № 1

К сертификату соответствия № _____ РОСС DE .ME92.B02540

**Перечень конкретной продукции, на которую распространяется
действие сертификата соответствия**

код ОК 005 (ОКП)	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
код ТН ВЭД России		

Взрывозащищенные компьютерные терминалы Gesma Challenger и панельные компьютеры Gesma Explorer с комплектующими компонентами в составе:

Техническая документация
изготовителя

40 0000 8471 60 700 0	15" монитор типа Challenger 15i-2-FMO с маркировкой взрывозащиты 1 ExibIICT4
40 0000 8471 60 700 0	18" монитор типа Challenger 18i-FMO с маркировкой взрывозащиты 1ExibIICT4
40 0000 8471 60 700 0	Клавиатура типа Challenger KB с маркировкой взрывозащиты 1 ExibIICT4
40 0000 8471 60 700 0	Трекбол типа Challenger TB, TB-2 с маркировкой взрывозащиты 1 ExibIICT4
40 0000 8471 60 700 0	Блок передачи данных типа Challenger TCV 2i с маркировкой взрывозащиты [Exib]IIC
40 0000 8471 60 700 0	15"/18" сенсорный монитор типа Challenger Touch 15i/18i-FMO (HB, -G-Touch) с маркировкой взрывозащиты 1 ExibIICT4
40 0000 8504 40 900 9	Источник питания для Challenger компонентов типа PSU 14i/*/468 (543) с маркировкой взрывозащиты 2Exqe[ib]IICT4
40 0000 8504 40 900 9	Источники напряжения для Challenger компонентов типа PSU 150/12(15, 24), PSU 150i/*/468 (543) с маркировкой взрывозащиты 2ExqeIICT4, 2Exqe[ib]IICT4



Руководитель органа

Эксперт

[Signature]
подпись
[Signature]
подпись

А.Н.Шатило
инициалы, фамилия

Л.В. Тарасова
инициалы, фамилия

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ТЕХНИЧЕСКОМУ РЕГУЛИРОВАНИЮ И МЕТРОЛОГИИ

№ **0453624**

ПРИЛОЖЕНИЕ № 1

К сертификату соответствия № РОСС DE .ME92.B02540

**Перечень конкретной продукции, на которую распространяется
действие сертификата соответствия**

код ОК 005 (ОКП)	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
код ТН ВЭД России		

40 0000 8471 60 700 0	Панель РС типа Explorer 15i/18i маркировкой взрывозащиты 2Exem(ia)IICT4
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40 0000 8471 60 700 0	Блок интерфейса типа Challenger RS232 TCS(RSI)1i-5V1(6V8, 8V2,X) с маркировкой взрывозащиты 1ExibIICT4, [Exib]IIC
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40 0000 8471 60 700 0	Клавиатура типа Challenger К**i-PS2 с марки- ровкой взрывозащиты 0ExiaIICT4
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40 0000 8471 60 700 0	Преобразователь в оптический интерфейс для панельного компьютера Explorer EFU-1-2-3- xx-x-xx с маркировкой взрывозащиты 2Exeq [op is]IICT4, 2Exq [op is]IICT4
--------------------------	--



Руководитель органа

подпись

А.Н.Шатило
инициалы, фамилия

Эксперт

подпись

Л.В.Тарасова
инициалы, фамилия



ФЕДЕРАЛЬНАЯ СЛУЖБА
ПО ЭКОЛОГИЧЕСКОМУ, ТЕХНОЛОГИЧЕСКОМУ И АТОМНОМУ НАДЗОРУ

РАЗРЕШЕНИЕ

№ PPC 00-045365

На применение

Оборудование (техническое устройство, материал):
Взрывозащищенные компьютерные терминалы Gesma Challenger
и панельные компьютеры Gesma Explorer с комплектующими
компонентами.

Код ОКП (ТН ВЭД): 40 0000 (8471 60 700 0, 8504 40 900 9).

Изготовитель (поставщик): Изготовитель: фирма "GeCma Components
GmbH" (Германия); поставщик: Закрытое акционерное общество
"ВСП Лимитед" (г. Москва, ул. Большая Почтовая, 22 блок 2).

Основание выдачи разрешения: Техническая документация,
сертификат соответствия МОС "Сертиум" № РОСС DE.ME92.B02540
от 17.08.2011 г., протокол экспертизы технической документации,
проверок конструкции и испытаний № 186ME-2011 от 01.08.2011 г.

Условия применения:

1. Разрешено применение во взрывоопасных зонах помещений и наружных установок, согласно маркировке взрывозащиты, ГОСТ Р 51330.13-99 (МЭК 60079-14-96), гл. 7.3 ПУЭ и в соответствии с отраслевыми нормами и правилами безопасности.
2. Внесение изменений в конструкцию технических устройств возможно только по согласованию с Федеральной службой по экологическому, технологическому и атомному надзору.

Срок действия разрешения до 03.10.2016

Дата выдачи 03.10.2011



Заместитель руководителя
С.Г. Радионова

А В 069629



EU-Konformitätserklärung EU Declaration of Conformity



Wir / We

GECMA Components electronic GmbH
Heisenbergstr. 26-40
50169 Kerpen, Germany

GECMA Components electronic GmbH
Heisenbergstr. 26-40
50169 Kerpen, Germany

erklären in alleiniger Verantwortung, dass unsere Produkte, /
declare under our sole responsibility that the products,

auf welches sich diese Erklärung bezieht, den Bestimmungen der folgenden Richtlinien entspricht: /
to which this declaration relates is in accordance with the provision of the following directives:

94/9/EG
2004/108/EG
2006/95/EG

ATEX Richtlinie/ ATEX Directive
EMV-Richtlinie/ EMC- Directive
Niederspannungsrichtlinie/ Low Voltage Directive

See Table below
EN 61326-1:2006
EN 61010-1:2010

Product name	ATEX Certificate No.	Notified Body	Marking	Standards
Challenger 15i-2-FMO #	DMT 00 ATEX E 089 X	Dekra Exam	ⓂII2G Ex ib IIC T4 Gb	EN 60079-0:2009, EN 60079-11:2007
Challenger 18i-FMO #	DMT 00 ATEX E 089 X	Dekra Exam	ⓂII2G Ex ib IIC T4 Gb	EN 60079-0:2009, EN 60079-11:2007
Challenger 22i-FMO # \$	DMT 00 ATEX E 089 X	Dekra Exam	ⓂII2G Ex ib IIC T4 Gb	EN 60079-0:2009, EN 60079-11:2007
Challenger KB #	DMT 00 ATEX E 089 X	Dekra Exam	ⓂII2G Ex ib IIC T4 Gb	EN 60079-0:2009, EN 60079-11:2007
Challenger KMU #	DMT 00 ATEX E 089 X	Dekra Exam	ⓂII2G Ex ib IIC T4 Gb	EN 60079-0:2009, EN 60079-11:2007
Challenger M #	DMT 00 ATEX E 089 X	Dekra Exam	ⓂII2G Ex ib IIC T4 Gb	EN 60079-0:2009, EN 60079-11:2007
Challenger MTD #	DMT 00 ATEX E 089 X	Dekra Exam	ⓂII2G Ex ib IIC T4 Gb	EN 60079-0:2009, EN 60079-11:2007
Challenger TB #	DMT 00 ATEX E 089 X, BVS 05 ATEX E 048	Dekra Exam	ⓂII2G Ex ib IIC T4 Gb ⓂII2G EEx ib IIC T4	EN 60079-0:2009, EN 60079-11:2007
Challenger TCV 2i #	DMT 00 ATEX E 089 X	Dekra Exam	ⓂII(2)G[Ex ib Gb] IIC	EN 60079-0:2009, EN 60079-11:2007
Challenger Cri #	DMT 02 ATEX E 141	DMT	ⓂII2G EEx ib IIC T4	EN 60079-0:2009, EN 60079-11:2007
Challenger Ji #	TÜV 04 ATEX 2459	TÜV Nord	ⓂII1G EEx ia IIB T4 ⓂII2G EEx ia IIC T4	EN 60079-0:2009, EN 60079-11:2007, EN 1127-1:2011, EN 60079-26 :2007
Challenger TPI #	TÜV 04 ATEX 2458	TÜV Nord	ⓂII1G EEx ia IIB T4 ⓂII2G EEx ia IIC T4	EN 60079-0:2009, EN 60079-11:2007, EN 1127-1:2011, EN 60079-26 :2007
Challenger PSU14i/*/*/* #	DMT 00 ATEX E 090	DMT	ⓂII2G EEx q e [ib] IIC T4	EN 60079-0:2009, EN 60079-5: 2007 EN 60079-7:2007, EN60079-11:2007
Challenger PSU150i/*/*/* #	TÜV 03 ATEX 2032	TÜV Nord	ⓂII2G EEx q e [ib] IIC T4	EN 60079-0:2009, EN 60079-5: 2007 EN 60079-7:2007, EN60079-11:2007
Challenger Touch 15i-2-FMO # ; 18i-FMO #	TÜV 02 ATEX 1959	TÜV Nord	ⓂII2G EEx ib IIC T4	EN 60079-0:2009, EN 60079-11:2007
Challenger RS232***i-* #	DMT 03 ATEX E 032X	DMT	ⓂII(2)G[EEx ib] IIC, ⓂII2G EEx ib IIC T4	EN 60079-0:2009, EN 60079-11:2007
Challenger 15i-2-HB-FMO #	BVS 05 ATEX E 020	EXAM	ⓂII2G EEx ib IIC T4	EN 60079-0:2009, EN 60079-11:2007
Challenger Mi-PS2 und Mi-PS2-B #	BVS 05 ATEX E 175	EXAM	ⓂII1G EEx ia IIB T4 ⓂII2G EEx ia IIC T4	EN 60079-0:2009, EN 60079-11:2007, EN 60079-26 :2007
Challenger K**i-PS2 #	BVS 05 ATEX E 174 X, IBExU 06 ATEX 1043 X	EXAM IBExU	ⓂII1G EEx ia IIB T4 ⓂII2G EEx ia IIC T4 ⓂII2D Ex tD A21 IP6X T120°C	EN 60079-0:2009, EN 60079-11:2007, EN 60079-26:2007 EN 60079-0:2009, EN 60079-31 :2009
CPS-1* #	TÜV 11 ATEX 7018 X	TÜV Rheinland	ⓂII2G Ex eq[ib]IIC T4 Gb	EN 60079-0:2009, EN 60079-5:2007, EN 60079-7:2007, EN 60079-11:2007

beschreibt beliebige Character, welche keinen Einfluss auf den Explosionsschutz bzw. das ATEX Zertifikat haben /
describe free signs which have no effect to the hazardous protection resp. the ATEX certificate.

\$ Note on EMC. Under radiated immunity testing the 22i-FMO, some visible disturbances can be seen on the display, but this does not obscure any displayed content.
This would be considered Criterion B pass.

Das jeweilige Zertifikat ist Bestandteil der Konformitätserklärung welcher weitere Details zu entnehmen sind /
The respective certificate is a part of this declaration of conformity and should be referred to for further details.

Die Überwachung des QS Systems gemäß der RL 94/9/EG Anhang IV wird durchgeführt durch: /
The surveillance of the quality system according to Directive 94/9/EG Annex IV is carried out by:

TÜV Rheinland No. 0035

S. Parfitt
Global Engineering Director
MTL Instruments
Luton, UK

J. Schiffer
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GeCma Components electronic GmbH
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23.April 2013

COOPER Crouse-Hinds